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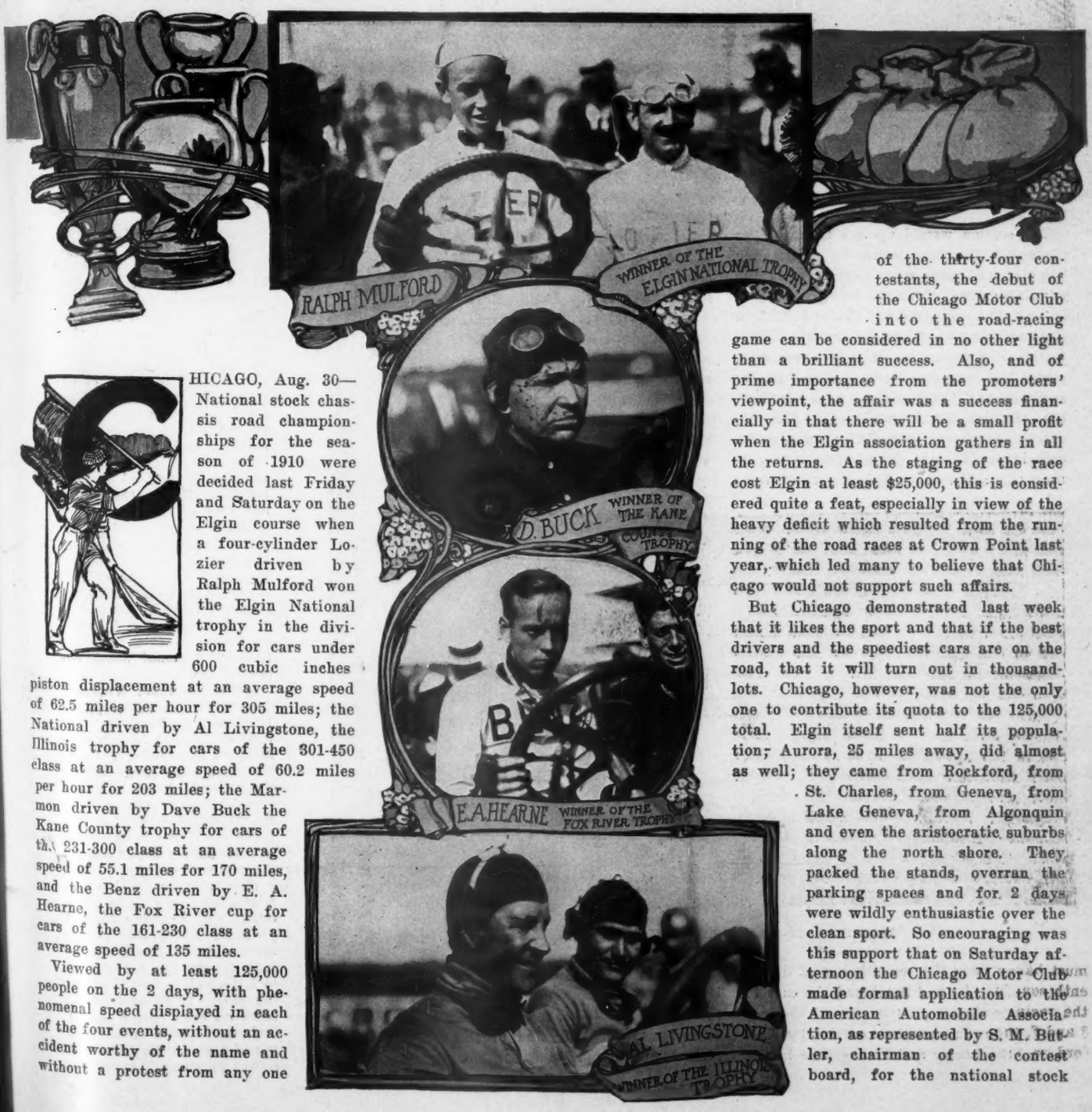
MOTOR AGE

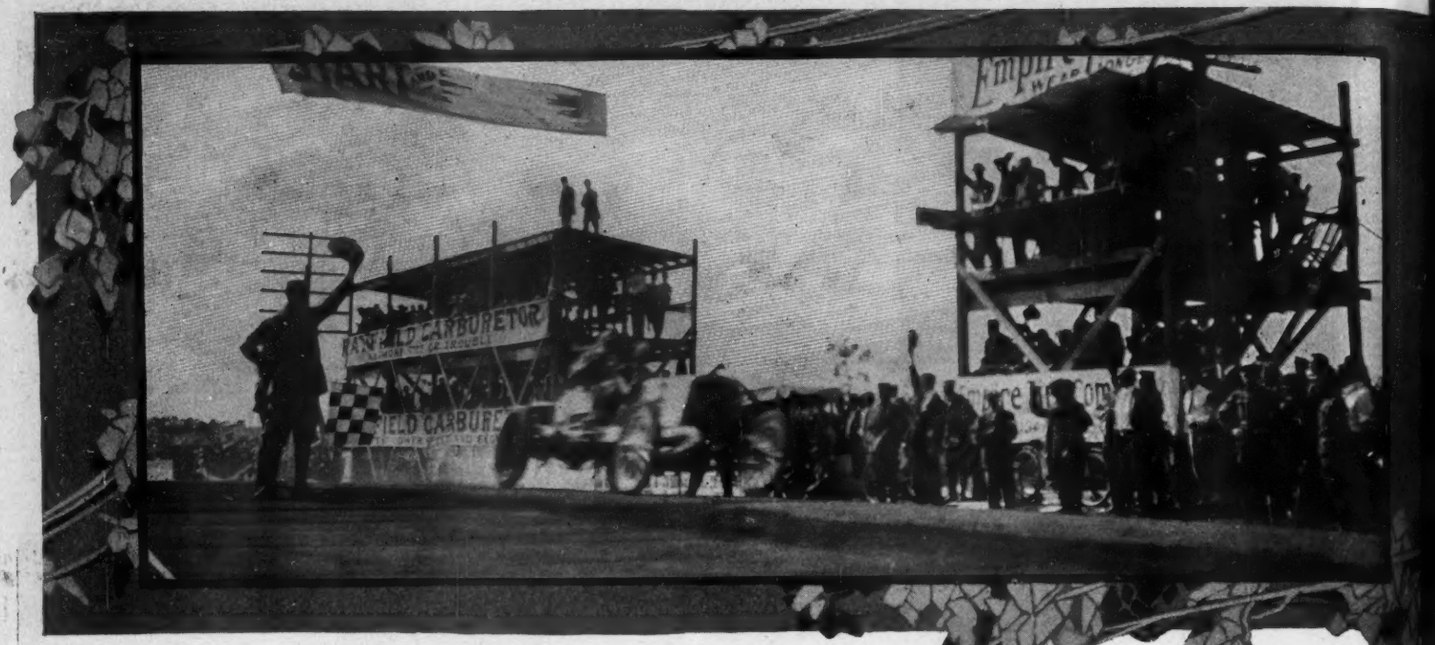
NATIONAL ROAD HONORS SETTLED AT ELGIN



CHICAGO, Aug. 30—National stock chassis road championships for the season of 1910 were decided last Friday and Saturday on the Elgin course when a four-cylinder Lozier driven by Ralph Mulford won the Elgin National trophy in the division for cars under 600 cubic inches piston displacement at an average speed of 62.5 miles per hour for 305 miles; the National driven by Al Livingstone, the Illinois trophy for cars of the 301-450 class at an average speed of 60.2 miles per hour for 203 miles; the Marmon driven by Dave Buck the Kane County trophy for cars of the 231-300 class at an average speed of 55.1 miles for 170 miles, and the Benz driven by E. A. Hearne, the Fox River cup for cars of the 161-230 class at an average speed of 135 miles.

Viewed by at least 125,000 people on the 2 days, with phenomenal speed displayed in each of the four events, without an accident worthy of the name and without a protest from any one of the thirty-four contestants, the debut of the Chicago Motor Club into the road-racing game can be considered in no other light than a brilliant success. Also, and of prime importance from the promoters' viewpoint, the affair was a success financially in that there will be a small profit when the Elgin association gathers in all the returns. As the staging of the race cost Elgin at least $25,000, this is considered quite a feat, especially in view of the heavy deficit which resulted from the running of the road races at Crown Point last year, which led many to believe that Chicago would not support such affairs.

But Chicago demonstrated last week that it likes the sport and that if the best drivers and the speediest cars are on the road, that it will turn out in thousands-lots. Chicago, however, was not the only one to contribute its quota to the 125,000 total. Elgin itself sent half its population; Aurora, 25 miles away, did almost as well; they came from Rockford, from St. Charles, from Geneva, from Lake Geneva, from Algonquin and even the aristocratic suburbs along the north shore. They packed the stands, overran the parking spaces and for 2 days were wildly enthusiastic over the clean sport. So encouraging was this support that on Saturday afternoon the Chicago Motor Club made formal application to the American Automobile Association, as represented by S. M. Butler, chairman of the contest board, for the national stock

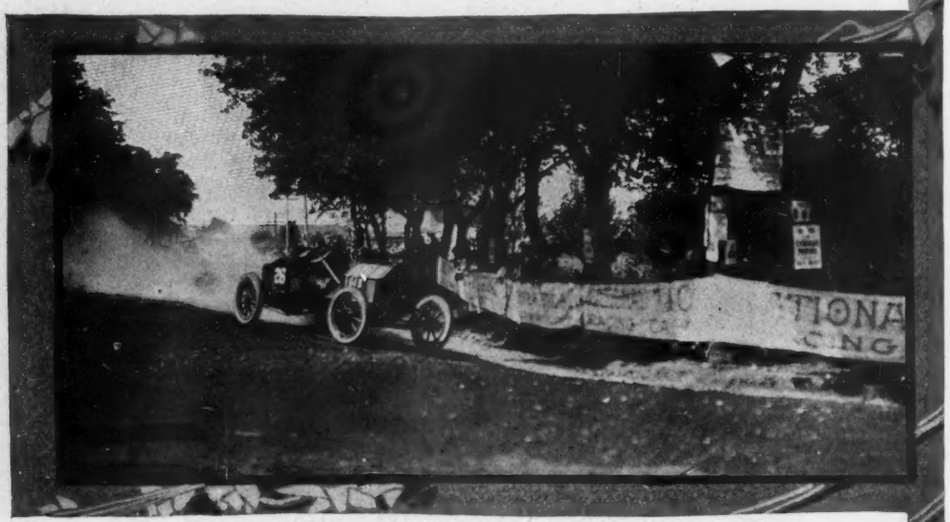


MULFORD IN LOZIER WINNING BIG RACE

chassis events of 1911, and Butler said he saw no reason why Chicago should not get them.

The session wound up last night at the Chicago Athletic Association when the trophies and cash were presented to the winning drivers. Mulford was given $1,000 in cash, but unfortunately the $4,500 Elgin National trophy presented by the Elgin National Watch Co., will not be completed until September 10, so the Lozier company had to be content with admiring the photograph of the big cup. This inspection, however, brought out a peculiar coincidence in that it disclosed the fact that the artist who designed the trophy must have been the seventh son of a seventh son, for he had numbered the cars in the racing sketch on the side of the cup 3 and 7, the same numbers carried by Mulford on the Lozier and Livingstone in the National. This drawing, it might be explained, was made more than a month ago—before the entries started to come in. This coincidence recalls the Cobe cup race a year ago when Artist Wilder's poster showed a car carrying No. 10, which was the number of the Buick, which Chevrolet drove to victory.

Livingstone not only was given the Illinois trophy and its accompanying $400 in cash, but he also picked up an additional $300 for being second to Mulford in the big race. Greiner in the National was third in the Elgin National, but being an amateur he has been awarded plate instead of the cash. Buck drew the Kane County and $300 in money and Hearne landed the Fox River cup and $300. The evening at the C. A. A. was brought to a close by the reproduction of the moving pictures of the races as taken by the



DAVE BUCK, MARMON, FIRST IN KANE COUNTY

The Winners Talk

Ralph Mulford, Lozier, winner of Elgin National trophy — I never competed in a race where better sportsmanship was displayed than in the Elgin National. Every driver was more than willing to give a faster car the right of way and often risked their lives by giving way in order to leave a clear track. The mechanics were on the job all the time and acted as eyes for the drivers every inch of the way. The Chicago Motor Club is to be complimented on the way it has handled the meet and I cannot see one point it has overlooked. The guarding of the course by the soldiers was done in a manner that aroused my admiration. I sincerely trust that I will be able to come out here again next year and defend my title as national stock car road champion.

Al Livingstone, National, winner of Illinois trophy— I drove both days of the meet and I wish to join with Mulford in praising the way the races were conducted by the Chicago Motor Club. I was the first one on the course and I learned it like I did my A B C's at school. For 10 days I drove around the circuit twenty-five times a day, using a touring car. I studied every little peculiarity and knowing these I probably did better in the races than I would had I only got to Elgin a day or so before the races. I found the course to be at least 10 miles an hour faster than I had anticipated and that gravel makes a fine road for racing purposes.

LIVINGSTONE IN NATIONAL RACES TO VICTORY IN THE ILLINOIS

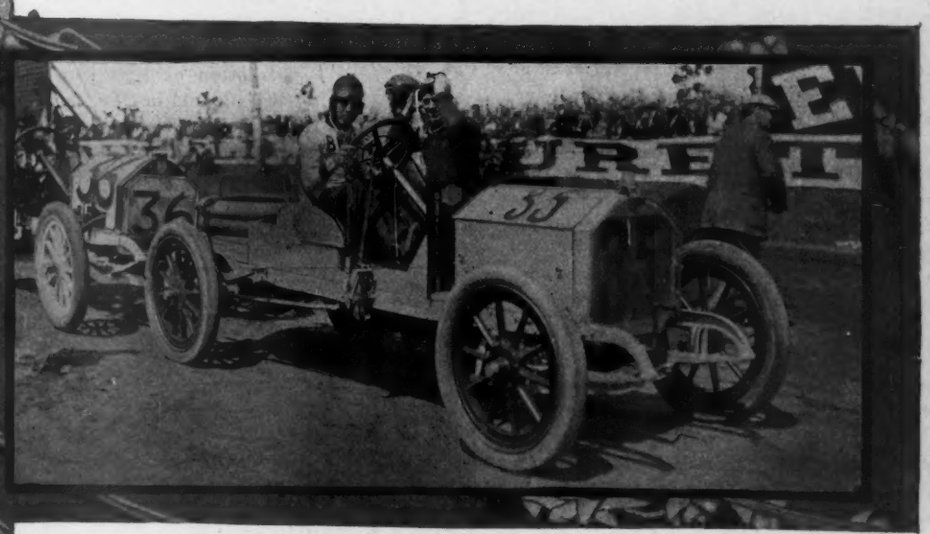
After the Races

Dave Buck, Marmon, winner of Kane County trophy —I am a Chicago man and this was my first big road race. So of course I am greatly elated not only over my own success but over the way the Chicago Motor Club has handled such a big proposition. In the Kane County cup race I found that the men I was racing against were thorough sportsmen, always willing to divide the road and then some. It took a hard battle to get into the lead and when I did get there I bumped into the broken spring. They wanted me to quit then, but I felt confident that I could win, so I told them I was willing to take a chance. Now I am glad that I did, for it won me that big cup.

E. A. Hearne, Benz, winner of Fox River trophy— This is my third road race. I drove in the Cobe cup at Crown Point and in the last Vanderbilt, but in those I was in big cars. It was a different proposition this time, but I went through the race without a stop. Perhaps I was lucky, but from the very first moment I felt confident that I could land the trophy. I got away first and kept a-going all the time. I guess that's why I won. The road was fine and those soldiers did their work so cleverly that I never had to give a thought to people getting on the course. The Chicago Motor Club never does anything by halves and I guess it has done something this time of which it may well be proud.

American Motor Racing Pictures Co. Geting back to the racing itself, the critic finds much over which to marvel. The sport was intensely interesting, the competition keen and, best of all, the sportsmanship of the drivers themselves was most commendable. One man was disqualified, it is true, for foul driving, but that was caused no doubt by the carelessness of the mechanic in failing to look back rather than any intention to foul on the part of the driver. Probably the most remarkable feature of the 2 days, though, from a racing standpoint was the fact that in all four races the winners went through without a tire change. In the Illinois the stop. That was when he broke a rear spring just after he had gotten into the lead. He was advised to quit, but he pluckily refused, declaring he was willing to take a chance and risk his life rather than lose the race. Hearne in the German Benz had Firestones on and he, too, made his 135 miles without a stop and without having to touch his tires.

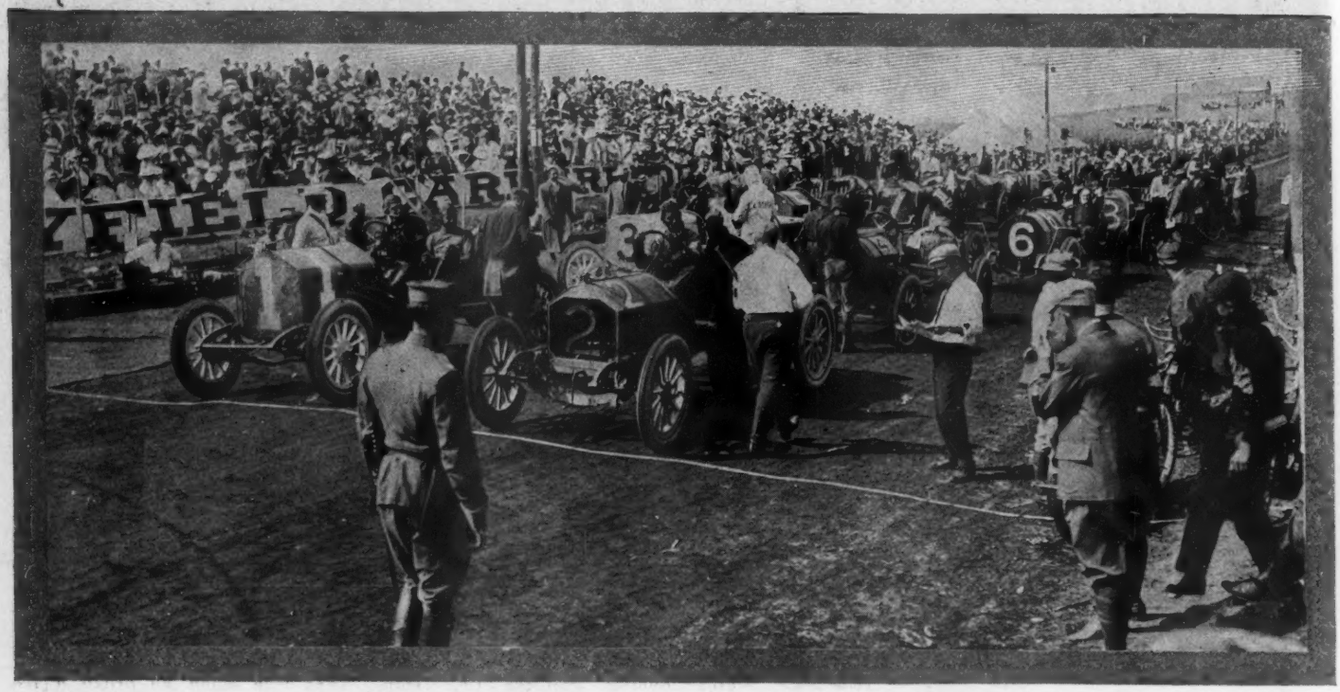
In the big race Saturday Mulford in the Lozier, which was equipped with Michelins like the National and Marmon, traveled 305 miles at an average speed of 62.5 miles per hour and he, too, never had to change a tire. Mulford made only one stop in the triple century. That was at



HEARNE, BENZ, FOX RIVER TROPHY WINNER ON FRIDAY

first day Livingstone never made a stop, even to take on fuel, and at the end of the 203 miles his Michelins looked almost like new. Buck in the Kane County never changed his Michelins and made but one the end of the twenty-fourth lap when he pulled up at the pits and used up 1 minute 30 seconds taking on gasoline and oil. Livingstone did almost as well. He stopped twice. The first time he stopped

MULFORD'S LOZIER WINS ELGIN NATIONAL



ELGIN NATIONAL TROPHY RACE CARS LINED UP FOR THE START

to fix the needle valve of his carbureter, which had jumped out, while the next time it was to adjust the steering gear and to change two rear tires. Another car to perform creditably in the non-stop column, although it was not placed, was the Lexington, driven by Bob Drach in the Illinois, which was in its twenty-second lap when the race ended. It did not make a stop.

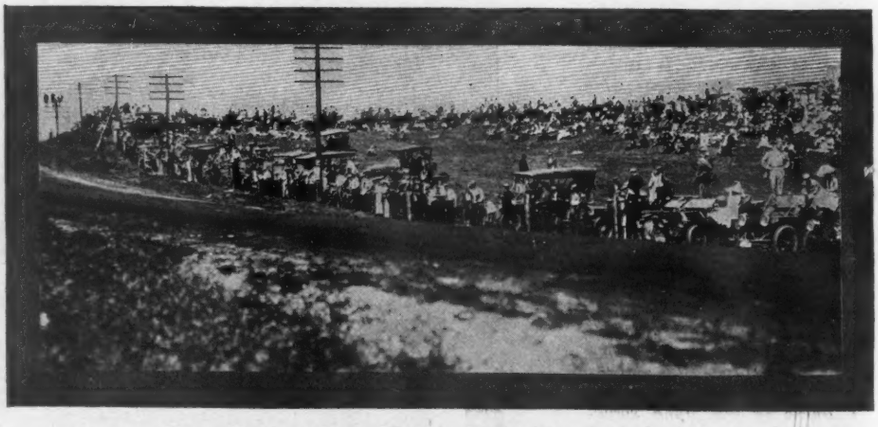
The performances of Livingstone and Greiner in the National was remarkable, for the two men and the two cars were in both days' races. Livingstone won the Illinois at an average speed of 60.6 miles per hour, while in the Elgin National he ran second and did 60.2 miles per hour. This made a total of 508 miles for the car and driver, covered at a mile a minute pace. Greiner finished in Friday's race and was third in the big event of Saturday. Livingstone also demonstrated his daring by driving the 305 miles Saturday with a cracked frame, which undoubtedly held him down in his pace.

Mulford's great performance of Saturday startled the racing enthusiasts. The regularity of running of the Lozier was one of the features of the afternoon. Never showing much better than 64 miles to the lap, Mulford still maintained an average of 62.5 miles per hour. It clearly was apparent he could have done much better had he been pushed and from a sporting standpoint it is to be regretted that Grant and Harroun were eliminated on the second lap and Robertson handicapped by tire troubles. One can imagine what a terrific speed battle would have been the result had these three men been

Victor Shows Average of 62.5 M.P.H.

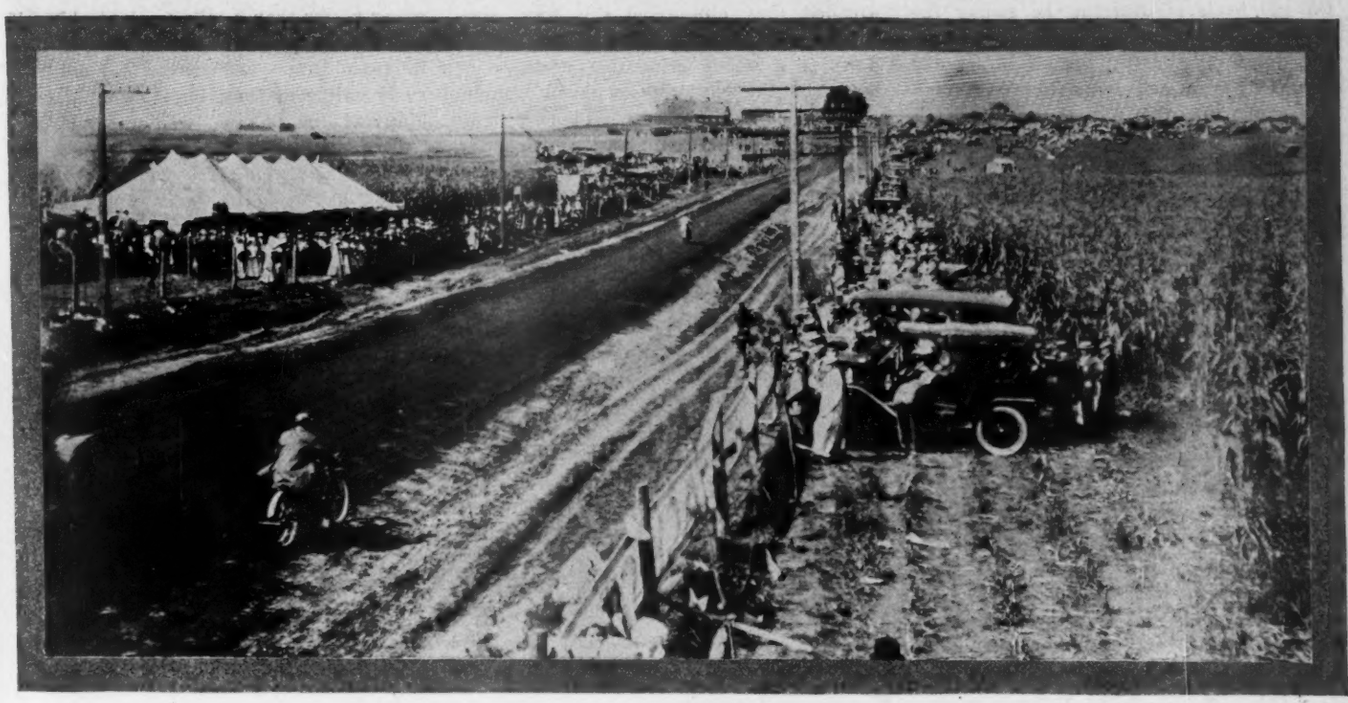
ELGIN, ILL., Aug. 27—Ralph Mulford, driving a four-cylinder 1911 Lozier, today won the $4,500 Elgin National trophy from as brilliant a field as ever faced the starter in American stock chassis road races. Not only did he win, but the average pace he maintained was within a fraction of that made by Grant in the last Vanderbilt, his rating being 62.5 miles per hour for 305 miles, whereas Grant did 62.8 for 276 miles in the Vanderbilt. As in the case of Livingstone in the Illinois and Hearne in the Fox River, Mulford went the entire distance without a tire change. He made only one stop today, and that to take on supplies, at 203 miles. Mulford made this stop, thinking he was losing a tire, but on finding that it was not the case he took advantage of the opportunity to fill his tanks, after which he again resumed his journey, which was without interruption until the end of the race, in which he was returned winner.

The big white Lozier with its white-garbed driver and mechanic made a great impression upon the 75,000 spectators by the regularity of its running. With the regularity of an express train and at a speed fully as great, Mulford made lap after lap with great consistency. His fastest circuit was his twenty-second, when he clocked 7:54, while his slowest was the twenty-fifth, when the watches showed



DOWN GRADE IN HOME STRETCH, WHERE FAST TIME WAS MADE

TROPHY FROM FAST FIELD OF AMERICAN CARS



LOOKING TOWARD GRANDSTAND AND SHOWING BIG CROWDS OF SPECTATORS

National Cars Second and Third

9:46. This included the time occupied at the pit in taking on supplies, the watches there showing that Mulford stopped 1 minute 30 seconds. In the latter portion of the race Mulford had his average boosted to 64 miles an hour, but like Livingstone he too played safe. No one was pushing him and his most dreaded foes, Grant and Harroun, were in the grand stand and poor Robertson was fighting the puncture demon so he made certain the national road championship for the year for cars under 600 cubic inches displacement. Mulford had a lap and a half lead at the finish, the runner-up being Al Livingstone in the National, winner of the Illinois trophy yesterday, who added to his laurels by averaging 60.2 for the distance, which was half again as far as he went yesterday, when he averaged 60.6.

Combining the performances of the two days it will be seen that Livingstone made a most remarkable performance. In the same car and on 2 consecutive days, he had covered 508 miles at an average of better than a mile a minute and with only two stops, both of them made today. One of these was to adjust his steering gear and in the other he changed two rear tires and took on fuel.

Third to Mulford was another National, the one driven by Arthur Greiner, the amateur who has well established himself as one of the best drivers in the country. Greiner fought hard for his honors today, but handicapped though he was by minor troubles, he nevertheless never gave up the fight and at the finish he was a good third with an average of 58.4 miles per hour. The other finisher was George Robertson in No. 5 Simplex, whose hard luck in the tire line won for him the sympathies of the spectators. Always smiling, good-natured Robertson spent most of his time making tire changes, it being a matter of record that he had to make eighteen changes during the race. Notwithstanding this he fought it out to the end, and his average of 54.9 miles per hour was a remarkably good performance, everything considered.

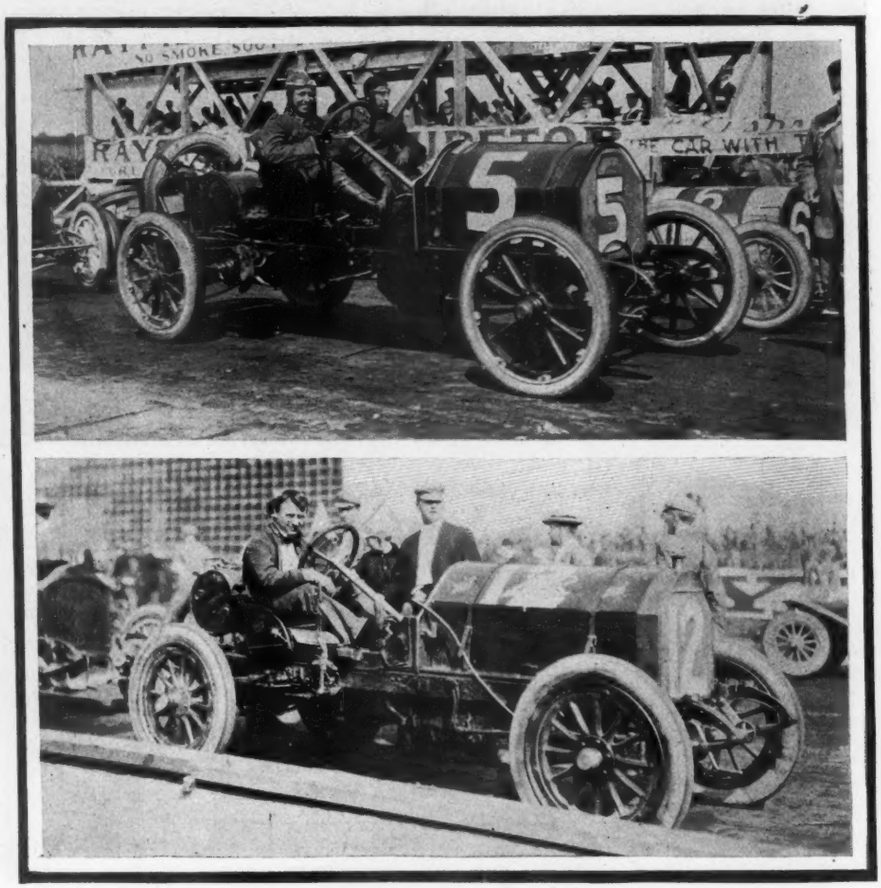
Besides the four cars that finished, there started in the big race at 10 o'clock this morning a Black Crow driven by Stinson, a Marmon with Harroun at the wheel, an Alco driven by Grant, a Simplex with Saynor up, a Kisselkar with Harry Endicott in the seat, the Dawson Marmon, the Matheson handled by Basle, the Knox with Oldfield driving and Schiefler's Jackson, surely a most brilliant field. Undoubtedly had it not been for accidents early in the race the contest would have resulted in the greatest road battle ever fought on American highways. With such dashing drivers, each one eager to win national honors, it would seem now as if it would have taken a pace of 66 or 67 miles an hour to have won had it not been for early misfortune. Grant, the Vanderbilt winner, had mapped out a campaign that was a departure from his usual practice. Instead of playing a waiting game as he did at Lowell and on Long Island last year, Grant started out to beat it from the very first. He made the fastest time on the first lap, 8:12, and he shot by the stand for the first time right on the heels of Ray Harroun in the Marmon, having practically closed the 30-second gap that existed at the start. This in itself was a remarkable feat, for everyone

SMOOTH, LEVEL STRETCH ON THE NORTH LEG OF THE ELGIN COURSE

knows that Harroun is no laggard. But results a few seconds later showed that Grant's plan did not work out very well. On the heels of Harroun he swung the Hornbeek corner and at McLain turn, a third of a mile further on, his career was brought to an end by a twisted clutch which put the Alco out of the race at a time when it looked as if it were going to be a big factor.

If Grant were unfortunate so was Harroun, for the Marmon star was put out also on this round by a frozen piston that eliminated the yellow car. The first lap had shown Grant leading Mulford by 6 seconds and Robertson by 8, and the terrific pace at which these cars were going aroused the occupants in the grand stand to the fever heat of excitement. It looked like a speed duel which would result in a general shattering of records. But even after Harroun and Grant had been put out, there still remained a good prospect of a hard fight. On the second round Mulford quickened his pace and he made an 8-minute circuit and had Greiner by 14 seconds and Robertson by 8. Livingstone became a factor in the third round when he slipped in between Mulford and Robertson and the three ran this way to the fifth lap where Robertson jumped to second, only 4 seconds separating him from Mulford at the end of the fifth lap. This was picked up in the next round and 50 miles showed the Lozier and Simplex tied to the second. Robertson by this time had his second wind and for the seventh, eighth and ninth laps he was out in front, although only by a slight margin over Mulford. The Lozier man was sticking tight and at the end of the ninth circuit only was 3 seconds back, while Livingstone in third place was 2 minutes 27 seconds behind Robertson. Then Robertson began to have his tire trouble. It came in bunches, and poor George saw his hopes slip away puncture by puncture. He died hard, but there was no stemming the tide of misfortune and from this time on the big New Yorker never was a factor —he was lucky to be able to finish at all.

Grant, Harroun and Robertson, his most dreaded foes, eliminated this way, Mulford's mind was at rest and he settled down to a steady grind that promised to land him the cup without much trouble. Livingstone had not given up hope by any means and he trailed along, waiting for something to happen up in front. But there was nothing doing and Mulford refused to slow. A stop in the twentieth round cost valuable time, but outside of this slow round Livingstone showed the same consistency that he did yesterday. He was going better than a mile a minute himself, but the big white car never wavered from its rapid pace. Livingstone did not have clear sailing at that, for sticking close to him was Joe Dawson, who was trying to redeem the house of Marmon and who was running third. He refused to acknowledge himself beaten and because of his dogged determination the spectators were treated



George Robertson in Simplex, Who Made a Game Fight
Barney Oldfield in Knox, One of Elgin National Candidates

OFFICIAL TABLE SHOWING THE TIMES MADE EACH LAP BY THIRTEEN CARS IN THE ELGIN NATIONAL

No.	Car	Driver	Entrant	Bore	Stroke	Weight		1 8 miles, 2,499 feet	2 16 miles, 4,998 feet	3 25 miles, 2,217 feet	4 33 miles, 4,716 feet	5 42 miles, 1,935 feet	6 50 miles, 4,434 feet	7 59 miles, 1,653 feet	8 67 miles, 4,152 feet	9 76 miles, 1,371 feet	10 84 miles, 3,870 feet	11 93 miles, 1,089 feet	12 101 miles 3,588 feet	13 110 miles 807 feet
3	Lozier	Mulford	Lozier Motor Co.	4	5⅝	3,270	Elapsed time.	8:18	16:18	24:18	32:25	40:37	48:44	56:53	64:57	73:03	81:09	89:10	97:10	105:06
							Lap time	8:18	8:00	8:00	8:07	8:12	8:07	8:09	8:04	8:06	8:06	8:01	8:00	7:55
7	National	Livingstone	National Automobile Co.	5	5 11/16	2,735	Elapsed time.	8:24	16:26	24:28	32:36	42:09	50:23	58:24	66:19	74:27	82:29	90:32	98:35	106:45
							Lap time	8:24	8:03	8:02	7:58	9:43	8:14	8:01	7:55	8:08	8:02	8:03	8:03	8:10
1	National	Greiner	A. W. Greiner	5	5 11/16	2,775	Elapsed time.	8:26	16:32	24:38	33:01	42:50	51:23	61:07	69:17	77:37	85:56	94:13	102:30	111.00
							Lap time	8:26	8:06	8:06	8:23	9:49	8:33	9:44	8:10	8:20	8:19	8:17	8:17	8:30
5	Simplex	Robertson	L. A. Shadburne	5¾	5¾	3,150	Elapsed time.	8:20	16:26	24:33	32:36	40:41	48.44	56:51	64:55	73:00	89:21	97:36	109:28	117:45
							Lap time	8:20	8:06	8:07	8:03	8:05	8:03	8:07	8:04	8:05	16:21	8:15	11:47	8:22
8	Simplex	Saynor	L. A. Shadburne	5¾	5¾	3,100	Elapsed time.	13:57	22:51	32:01	46:25	56:15	66:28	79:51	91:13	110:10	120:03	129:29	138:54	148:46
							Lap time	13:57	8:54	9:10	14:24	9:50	10:13	13:23	11:22	18:57	9:53	9:26	9:25	9:52
12	Knox six	Oldfield	Barney Oldfield	5	4¾	2,775	Elapsed time.	8:32	20:37	28:40	37:18	46:00	57:41	69:05	82:49	93:44	103:35	112:34	121:25	130:04
							Lap time	8:32	12:05	8:03	8:38	8:42	11:41	11:24	13:44	9:55	9:51	8:59	8:51	8:39
10	Marmon	Dawson	Nordyke & Marmon Co.	4½	5	2,255	Elapsed time.	8:51	17:21	25:50	34:21	42:50	51:16	59:43	68:10	76:37	85:04	93:29	101:45	110:05
							Lap time	8:51	8:30	8:29	8:31	8:29	8:16	8:27	8:27	8:27	8:27	8:25	8:16	8:20
2	Black Crow	Stinson	Black Mfg. Co.	4 5/16	4⅞	2,270	Elapsed time.	9:55	19:32	29:01	40:13	49:38	59:08	68:40	88:26	97:58	108:50	124:03	133:50	142:44
							Lap time	9:55	9:37	9:40	11:02	9:25	9:30	9:32	19:46	9:32	10:52	15:18	9:42	8:54
14	Jackson	Schiefler	Ralph Temple Auto Co.	4⅛	4¾	2.300	Elapsed time.	9:00	20:09	31:40	40:24	53:42	62:19	70:50	79:25	88:01	96:27	105:00	113:32	122:03
							Lap time	9:00	11:09	11:31	8.44	13:18	8:37	8:31	8:35	8:36	8:26	8:33	8:32	8:31
11	Matheson six	Basle	Matheson Automobile Co.	4½	5	3,120	Elapsed time.	8:48	17:20	25:54	34:34	43:11	51:58	60:44	69:48	78:00	87:24	95:50	Broken whe	
							Lap time	8:48	8:32	8:34	8:40	8:37	8:47	8:46	9:04	8:21	9:15	8:26		
9	Kisselkar	H. Endicott	H. P. Branstetter	4⅞	4¾	2,255	Elapsed time.	9:38	18:49	28:07	37:23	46:41	55:58	65:03	76:23	85:52	94:56	133:58	Broken radi	
							Lap time	9:38	9:11	9:18	9:16	9:18	9:17	9:05	11:20	9:29	9:04	38:57		
6	Alco six	Grant	American Locomotive Co.	4 4/5	5 3/5	3,190	Elapsed time.	8:12	Twisted clutch											
							Lap time	8:12												
4	Marmon	Harroun	Nordyke & Marmon Co.	4½	5	2,330	Elapsed time.	8:48	Seized piston											
							Lap time	8:48												

to a thrilling three-handed duel in which Livingstone, Dawson and Greiner participated. The three cars were in a bunch and when the battle started in the seventeenth lap Livingstone was in front, Greiner second and Dawson third. The Marmon passed Greiner and then it became a battle between Livingstone and Dawson, the latter collaring his men after a lap fight. It proved a disastrous victory for Dawson, however, for in the twenty-seventh circuit a broken frame developed and the Cobe cup winner walked back to the stand. This misfortune came just after he had climbed to second place, the returns at the end of the twentieth showing Marmon second, 7 minutes 8 seconds back of the Lozier and 1 minute 2 seconds ahead of the Livingstone National.

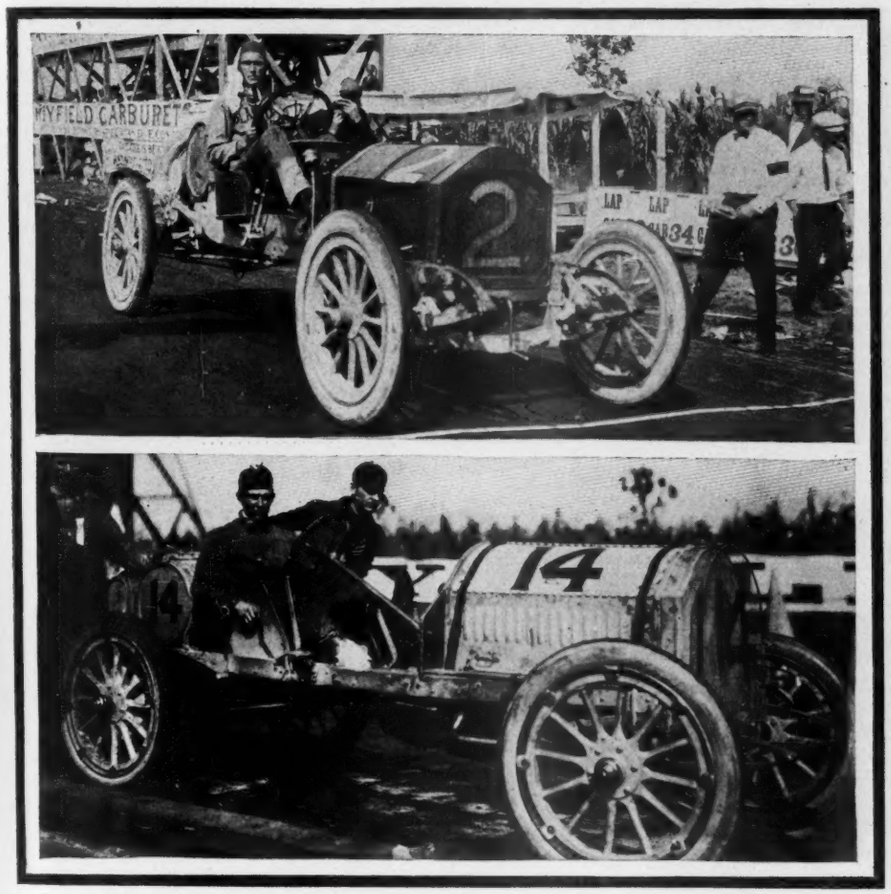
The elimination of Dawson left Livingstone second and Greiner third and from this point on to the finish the Nationals stuck to these positions with bulldog grip. Greiner had to make several stops, but he had so big a margin over Robertson he well could afford the time. At that, though, he managed to go through with great credit to himself and the car as his average of 58.4 miles per hour shows.

Misfortune came a-plenty to those back of the first four. The Kisselkar driven by Endicott went down and out in the twelfth lap when the radiator trouble which had developed earlier became so serious that Endicott realized it was useless to continue, so he chucked it. Schiefler in the Jackson was making good progress and had covered 110 miles in 122 minutes when steering gear trouble put it out. Basle in the Matheson six went out even earlier, a broken wheel stopping the car near McQueen in the twelfth lap. The Black Crow met a similar fate when it looked as if it would be one of the few cars to finish. Stinson had made a plucky fight and had gone 186 miles when the smash came that broke the wheel.

Barney Oldfield in the Knox six looked on the race more as a joke than anything else. Barney never has been particularly fond of this sort of exercise anyway, and from the very outset today he took it leisurely, jogging around complacently. Finally his ambition was aroused. He realized he had no chance at the money, but he thought to get a little honor by making a try for the fastest lap. He picked the twenty-fifth circuit for this effort, but his 7:57 failed to disturb the mark. Barney thought, however, this sprint might have put him up a place or so and he stopped at the pits. He then was among the tail-enders, but he asked Pickens: "What's my position, Bill?"

"Most embarrassing, Barney," retorted the fat one, and Oldfield went on his way abashed.

One of the incidents of the race was that Mulford went 200 miles without a gear-shift. There are four speeds on the Lozier, and Mulford used the third in order to save time by not shifting gears. On the turns he slipped his clutch and got around easily.



STINSON IN BLACK CROW, PUT OUT BY BROKEN WHEEL
SCHIEFLER IN JACKSON, ONE OF THE UNFORTUNATES

TROPHY RACE WON BY MULFORD IN A LOZIER AT AVERAGE PACE OF 62.5 MILES PER HOUR

14 miles, 3,906 feet.	15 miles, 525 feet.	16 miles, 3,024 feet	17 miles, 243 feet	18 miles, 2,742 feet	19 miles, 5,241 feet	20 miles, 2,460 feet	21 miles, 4,959 feet	22 miles, 2,178 feet	23 miles, 4,677 feet	24 miles, 1,896 feet	25 miles, 4,395 feet.	26 miles, 1,614 feet	27 miles, 4,113 feet	28 miles, 1,332 feet	29 miles, 3,831 feet	30 miles, 1,050 feet	31 miles, 3,549 feet	32 miles, 768 feet	33 miles, 3,257 feet	34 miles, 486 feet	35 miles, 2,985 feet	36 miles, 204 feet	Miles per hour	Position at finish
113:04	121:07	129:08	137:09	145:09	153:10	161:09	169:05	176:59	184:55	193:13	202:59	211:05	219:14	227:24	235:29	243:31	251:40	259:47	268:01	276:16	284:24	292:29.84	62.5	1
7:59	8:03	8:01	8:01	8:00	8:01	7:59	7:56	7:54	7:56	8:18	9:46	8:06	8:09	8:10	8:05	8:03	8:09	8:07	8:14	8:15	8:08	8:05.84		
114:53	123:07	131:39	140:06	148:24	156:37	169:19	177:43	186:00	194:15	202:24	210:33	218:47	227:05	235:26	243:55	252:28	260:59	269:39	278:10	286:50	295:32	304:10.90	60.2	
8:08	8:14	8:32	8:27	8:18	8:13	12:42	8:24	8:17	8:15	8:09	8:09	8:14	8:18	8:21	8:29	8:33	8:31	8:33	8:38	8:40	8:42	8:38.90		
119:19	127:45	136:12	144:35	153:01	161:30	169:52	178:12	186:21	197:05	205:25	213:48	222:42	231:20	240:02	249:00	257:56	266:54	275:50	284:46	293:54	303:24	313:23.3	58.4	
8:19	8:26	8:27	8:23	8:26	8:29	8:22	8:20	8:09	10:44	8:20	8:23	8:53	8:38	8:42	8:58	8:56	8:58	8:56	8:56	9:08	8:30	8:59.3		
129:52	138:03	146:08	159:34	167:47	179:14	187:28	198:53	207:02	215:01	223:00	230:57	239:10	252:30	260:46	268:52	276:49	285:46	298:29	306:53	315:02	324:04	332:20.98	54.9	4
12:07	8:11	8:05	13:26	8:13	11:27	8:14	11:25	8:09	7:59	7:59	7:57	8:13	13:20	8:16	8:06	7:57	8:57	12:43	8:24	8:09	9:02	8:16.98		
158:00	168:02	177:27	186:39	196:02	205:24	214:32	224:16	233:44	243:12	252:50	262:16	271:48	281:27	293:10	303:40	312:07	321:49	Running at finish						
9:14	10:02	9:25	9:12	9:23	9:22	9:08	9:44	9:28	9:28	9:38	9:26	9:32	9:39	11:47	9:30	9:24	9:42							
143:00	151:50	160:41	169:34	178:25	187:06	201:04	209:54	218:57	227:33	236:22	244:19	256:20	265:08	283:07	297:38	Stopped—Engine trouble								
12:56	8:50	8:51	8:53	8:51	8:41	13:58	8:50	9:03	8:36	8:49	7:57	12:01	8:48	17:59	14:01									
118:29	126:45	135:08	143:25	151:43	159:58	168:17	181:26	192:33	200:56	209:00	217:09	225:14	Broken frame											
8:24	8:16	8:23	8:17	8:18	8:15	8:19	13:09	11:07	8:23	8:04	8:09	8:05												
153:29	163:15	173:31	189:26	199:48	222:01	237:17	247:38	257:57	Broken wheel															
11:25	10:46	10:16	15:55	10:22	23:53	15:16	10:11	10:19																

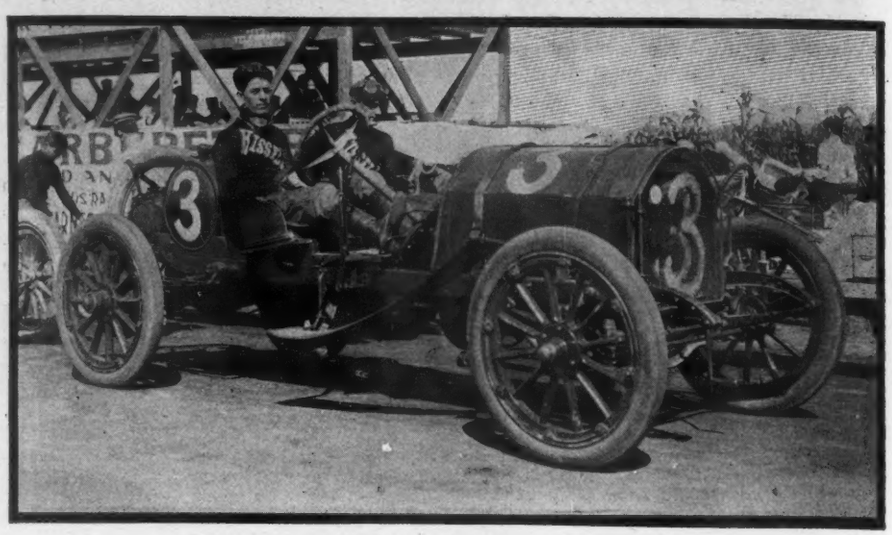
Broken steering gear

eel

ator

Repair Work Done on Racing Cars

PERHAPS the only disappointment in conjunction with the Elgin National race is the fact that some of the leading competitive cars in the contest dropped out in the second and third laps, thereby reducing the field so that at the finish only five of the cars were running, eight having dropped out at one stage or another on the race. This was a terrific toll when it is remembered that not a solitary one of the cars was wrecked due to upsetting on the course. The second lap saw Harroun in the Marmon and Grant in the Alco eliminated, both of them having been considered the keenest competitors in the race. This naturally dampened the enthusiasm a little. The twelfth lap saw Endicott in the Kissel and Basle in the Matheson drop out, and in the fourteenth lap Schiefler in the Jackson stopped. In lap twenty-three the Black Crow went out. In lap twenty-seven Dawson in the Marmon stopped. In lap thirty Oldfield in the Knox dropped out at the pits. The troubles of all of these cars were not those of design, except in one or two cases, and it is remarkable in a road race that so little work was done on the cars at the pits. The troubles were briefly as follows: Harroun had a piston seize in his Marmon; Grant was taking a corner too fast with his Alco and destroyed the clutch; Basle's Matheson had a dragging brake on the right rear wheel and when he stopped at the graveyard turn the wheel was on fire and was destroyed, otherwise the car was in commission; Endicott's Kisselkar had radiator trouble; the Black-Crow broke a rear wheel; Dawson had a piston seize; and Oldfield's trouble was in the cylinder, the exact nature of it not being known, for Oldfield retired from the conflict.



HARRY ENDICOTT IN KISSELKAR IN THE ILLINOIS CUP RACE

FASTEST LAPS MADE IN STOCK CHASSIS ROAD RACES

Time	M.P.H.	Race	Lap No.	Driver
7:52	64.5	Illinois	2	Livingstone
7:54	64.3	Illinois	3	Livingstone
7:54	64.3	Elgin National	22	Mulford
7:55	64.1	Elgin National	13	Mulford
7:55	64.1	Illinois	23	Dawson
7:55	64.1	Illinois	4	Livingstone
7:55	64.1	Elgin National	8	Livingstone
7:56	64.0	Elgin National	21	Mulford
7:56	64.0	Elgin National	23	Mulford
7:57	63.8	Illinois	5	Livingstone
7:57	63.8	Elgin National	25	Robertson
7:57	63.8	Elgin National	30	Robertson
7:57	63.8	Elgin National	25	Oldfield
7:58	63.7	Elgin National	4	Livingstone
7:59	63.6	Elgin National	14	Mulford
7:59	63.6	Elgin National	20	Mulford
7:59	63.6	Elgin National	23	Robertson
7:59	63.6	Elgin National	24	Robertson

MULFORD-LOZIER LAPS

Lap No.	Time	M.P.H.
1	8:18	61.2
2	8:00	63.4
3	8:00	63.4
4	8:07	62.6
5	8:12	61.9
6	8:07	62.6
7	8:09	62.3
8	8:04	63
9	8:06	62.7
10	8:06	62.7
11	8:01	63.3
12	8:00	63.4
13	7:55	64.1
14	7:59	63.6
15	8:03	63.1
16	8:01	63.3
17	8:01	63.3
18	8:00	63.4
19	8:01	63.3
20	7:59	63.6
21	7:56	64
22	7:54	64.3
23	7:56	64
24	8:18	61.2
25	9:46	55.8
26	8:06	62.7
27	8.09	62.3
28	8:10	62.3
29	8:05	62.8
30	8:02	63.2
31	8:09	62.3
32	8:07	62.6
33	8:14	61.7
34	8:15	61.6
35	8:08	62.4
36	8:05.84	62.7

CHENEY IN STAVER-CHICAGO IN FOX RIVER CUP RACE

No. 3 Lozier made but one stop in the race, which was at the end of lap twenty-four, when Mulford halted 1 minute 30 seconds to take on gasoline and oil. Mulford's car has direct drive on the third speed, and he did not use the fourth or indirect speed throughout the contest. Livingstone, driving No. 7, which finished second, made a couple of halts at the grand stand, one at the end of the fourth lap of 1 minute 27 seconds, for his gasoline feed, and another in the nineteenth lap to take on water, gasoline, oil, change a

When They Were Stopped at Pits

SCHILLO IN OVERLAND THAT PUT UP CONSISTENT RACE IN THE KANE COUNTY

HEARNE-BENZ LAPS

Lap No.	Time	M.P.H.
1	9:31	53.4
2	9:10	55.4
3	9:14	55.0
4	9:17	54.7
5	9:38	52.7
6	9:51	51.6
7	9:11	55.3
8	9:14	55.0
9	9:17	54.7
10	9:27	53.9
11	9:30	53.4
12	9:19	54.5
13	9:24	54.0
14	9:20	54.4
15	9:36	52.9
16	9:39	52.6

BUCK-MARMON LAPS

Lap No.	Time	M.P.H.
1	10:24	48.9
2	8:56	56.8
3	8:32	59.5
4	8:37	58.9
5	8:45	58.0
6	8:43	58.3
7	8:45	58.0
8	9:14	55.0
9	9:19	54.5
10	8:56	56.8
11	8:53	57.2
12	10:07	50.2
13	9:54	51.3
14	8:28	60.0
15	8:24	60.5
16	8:39	58.7
17	8:33	59.4
18	8:21	60.8
19	8:27	60.1
20	8:48	57.7

rear tire, and look over the steering gear. This stop consumed 4 minutes 12 seconds.

Arthur Greiner, the Chicago amateur who finished third, stopped three times at the pits. At the end of lap four he halted, having lost the breather cap on the standpipe on the crankcase. At the end of the sixth lap he changed the left rear tire and took on water, time 1 minute 20 seconds, and at the end of the twenty-second lap he stopped for oil and water.

Calamity is the only word applicable to George Robertson with his Simplex. According to the technical committee he changed eighteen tires on the circuit. Robertson's was the only car to start the race with steel-studded treads. These were later replaced by standard flat tread tires. The following summary of some of his stops will show the speed with which he worked: Tenth lap, oil and tires, 2 minutes 39 seconds. Lap twelve, tires, 30 seconds. Lap thirteen, tires, 29 seconds. Lap sixteen, tires, oil and water, 2 minutes 18 seconds. Lap nineteen, tires, 26 seconds. Lap twenty, tire, 20 seconds. Lap twenty-five, magneto cover, 30 seconds. Lap twenty-six, tire, 40 seconds. Lap thirty-one, tire and oil, 50 seconds. It must be understood that as Robertson changed the majority of his tires around the course that there was an extra stop for each one made at the grand stand. Only on one occasion did he reach the grand stand minus a tire, which was early in the race, when he stopped up without one on the right front wheel.

Saynor, driving a stripped Simplex touring car, was the only car running at the finish other than Mulford, Livingstone, Greiner and Robertson. Saynor drove a steady race throughout, doing laps around 9 minutes, his fastest circuit being his second one, made in 8:54. Three were recorded him at the grand stand, one in lap four for water and a tire, 57 seconds; another in lap seven for water and gasoline, 1:50; and another in lap twenty-seven for water and gasoline, 1 minute and 50 seconds.

Barney Oldfield in the Knox was looked upon as being one of the big factors, as he was driving his Knox six, which established the new stock car record on the Florida beach last spring. Barney proved a disappointment to his friends in that it resembled a pleasure ride rather than a race. To show that he had speed he made the twenty-fifth lap in 7:57, or at 63.5 miles per hour.

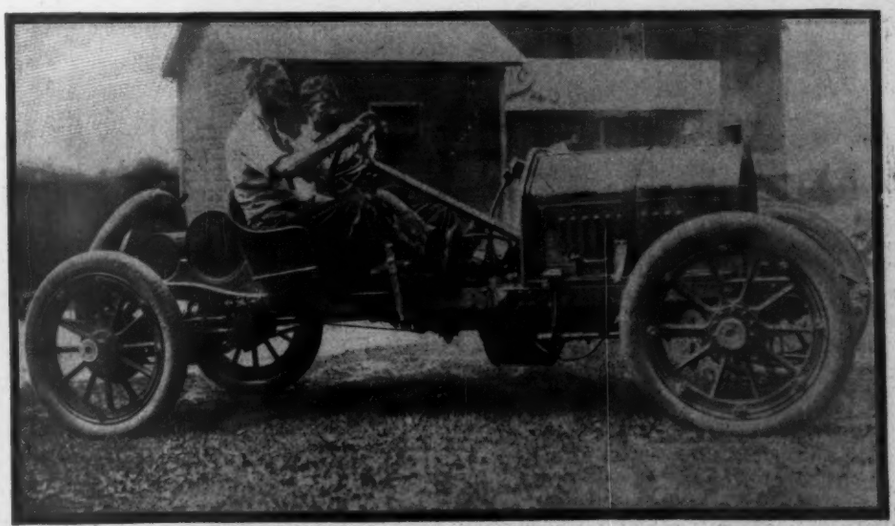
Schiefler was driving his Jackson with regularity from the fifth lap on until his left steering knuckle broke. This was the car that made such a showing in the Wheeler & Schebler race at the Indianapolis speedway.

Dawson, driving No. 10 Marmon, made one grand stand stop to take on oil, water, tires and change two plugs. The time lost was 3 minutes and 12 seconds.

Stinson, driving the Black-Crow No. 2, made his fastest lap in 8:54, or 57 miles per hour. He had two stops in front of the grand stand; one to attend to the mud apron, which was loosening, and the second to search for some engine base bolts.

LIVINGSTONE-NATIONAL LAPS

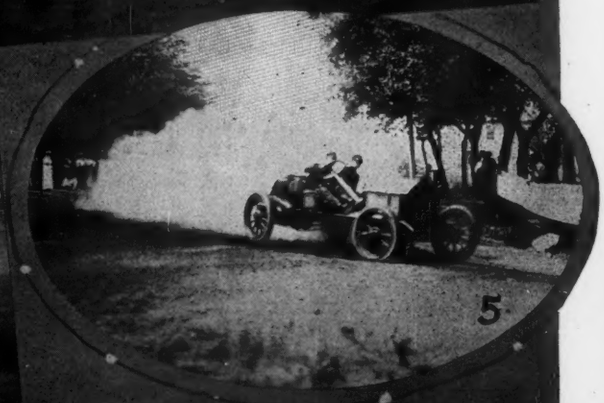
Lap No.	Time	M.P.H.
1	8:14	61.7
2	7:52	64.6
3	7:54	64.3
4	7:55	64.1
5	7:57	63.5
6	8:06	62.7
7	8:00	63.4
8	8:05	62.8
9	8:11	62.1
10	8:06	62.7
11	8:10	62
12	8:04	63
13	8:21	60.8
14	8:07	62.6
15	8:56	56.8
16	8:45	58.2
17	8:48	57.7
18	8:55	56.9
19	8:23	60.6
20	8:23	60.6
21	9:25	53.9
22	8:43	58.3
23	9:02	56.2
24	8:46.53	57.9



FRITSCH IN CINO WHICH WAS DITCHED IN SECOND LAP

Pictorial Features of the National

1—Endicott in Kisselkar in Illinois Cup at Hornbeek Turn
2—Livingstone in National Making Turn at McQueen's Corner
3—Heinemann in Marmon Swings Wide into Last Leg

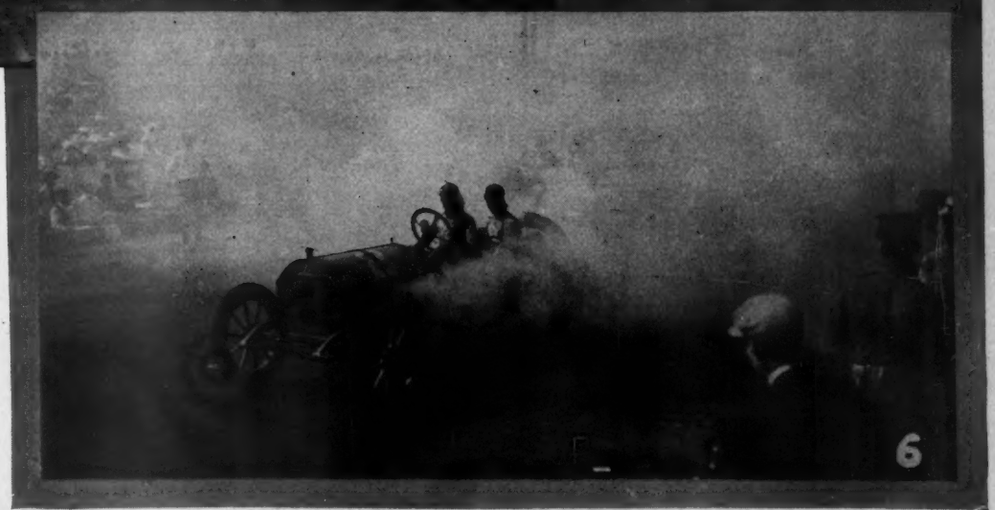


4—Greiner Kicks Up Some Dust on Saturday

5—Dawson in Marmon Knows How to Cut Corners

6—Cole and Overland at the Hornbeek Turn

Stock Chassis Races at Elgin Ill.



1—Robertson in Simplex in a Hurry

2—Livingstone Passing National Camp Friday

3—Hot Brush on One of the Last Turns

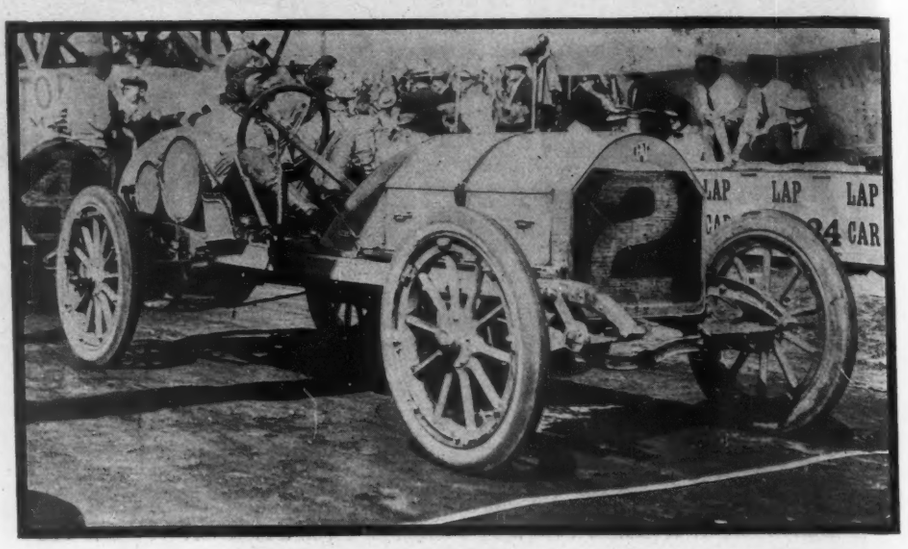
5—Cheney in Staver Chasing a Rival

5—Crowd Watches Mulford Make His Turn

6—Pearce in Falcar Making His Getaway

Al Livingstone in National Car

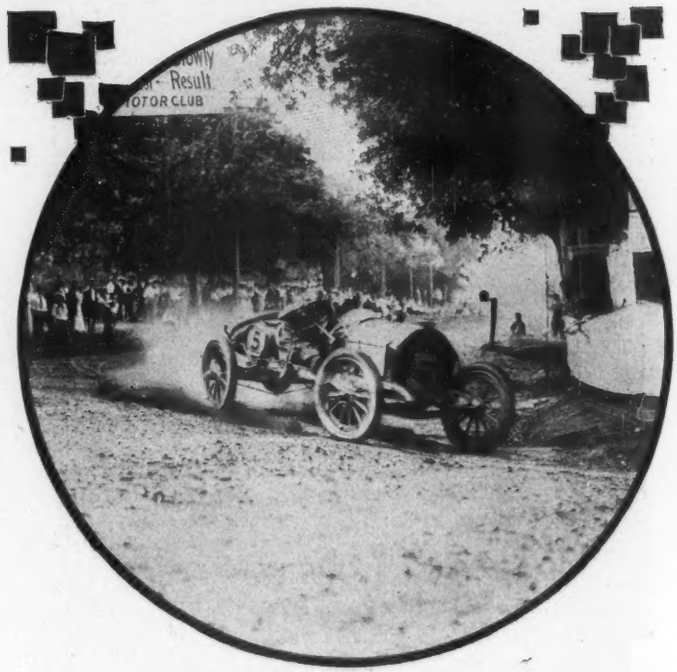
ELGIN, ILL., Aug. 27—Al Livingstone in No. 1 National, a demonstrating car entered by the Chicago agents and converted into a racer by stripping it of the body, today won the Illinois trophy for cars of from 301-450 cubic inches piston displacement and removed all doubts as to the speed of the Elgin course. Livingstone averaged 60.6 miles per hour for 203 miles and went the entire distance without a single stop, his fuel capacity being so great as to carry him that distance, while his tires went through without a mishap. From the outset Livingstone never left the result in doubt, leading from start to finish as did Hearne in the Fox River and at times showing some remarkable bursts of speed. Second to the National was Pearce in No. 2 Falcar, which averaged 57.2 for the distance, while third was Joe Dawson in the No. 6 Marmon, who made 56.9 miles per hour. There were just 4 seconds difference between third and fourth, Ireland in the Midland having an advantage over Greiner in No. 7 National, the former averaging 54.7 and the latter 54.6.



PEARCE IN FALCAR, SECOND IN THE ILLINOIS TROPHY RACE

The Illinois trophy race attracted a field of eight starters, of which five finished, while two of the others were running when the flags dropped for the final time. Only one car was put out of commission, that being Endicott's Kisselkar, which went out after the tenth because of radiator trouble. Besides the cars mentioned the other starters were Gelnaw, No. 4 Falcar, and Bob Drach in No. 8 Lexington.

From the outset the two Nationals started to make a runaway of it, and for a time it looked as if Livingstone and Greiner would accomplish their purpose. Livingstone being the first away, started to beat it from the beginning, and while Greiner kept as close to him as possible, he never was really dangerous after Livingstone had put in his remarkably four fast laps in the second, third, fourth and fifth round, in which he was clocked in 7:52, 7:54, 7:55 and 7:57. Greiner was more than 7 minutes back of him at the end of the seventh round and in the next circuit Pearce in a Falcar took second place away from him. Pearce, however, stayed in that notch for only two rounds, when both Gelnaw and Dawson passed him. Dawson went to second in the eleventh, while Gelnaw dropped to fourth, back of Greiner. Dawson was driving remarkably well at this point and he was runner-up from the eleventh to the sixteenth lap inclusive, at which latter point he was

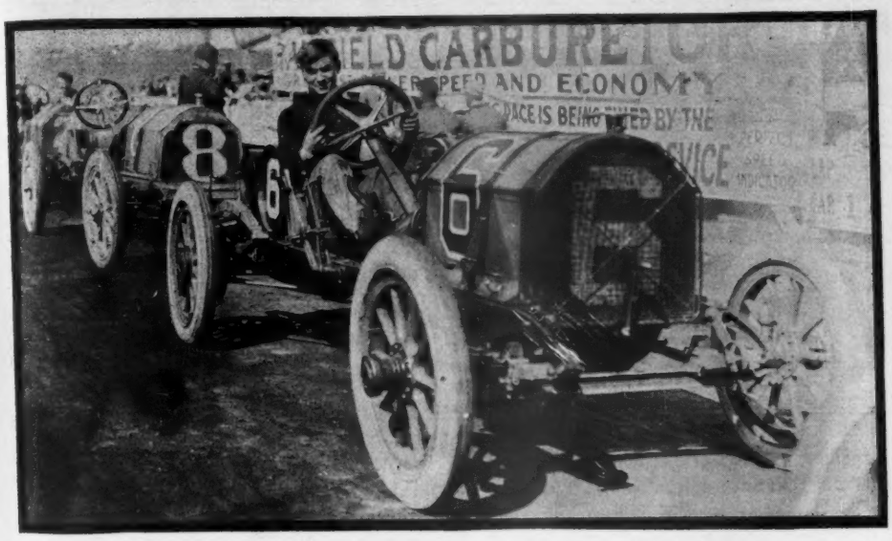


IRELAND IN MIDLAND IN THE ILLINOIS

TABLE OF RESULTS IN THE RACE FOR THE ILLINOIS TROPHY FOR THE 231-300 CLASS CARS.

No.	Car	Driver	Entrant	Bore	Stroke	Weight		1 8 miles 2,499 feet.	2 16 miles 4,988 feet.	3 25 miles 2,217 feet.	4 33 miles 4,716 feet.	5 42 miles 1,935 feet.	6 50 miles 4,434 feet.
1	National	A. Livingstone	National Automobile Co.	5	5 11-16	2735	Elapsed Time	8:14	16:06	24:00	31:55	39:52	47:58
							Lap Time		7:52	7:54	7:55	7:57	8:06
2	Falcar	W. H. Pearce	Fal Motor Co.	4⅛	5¼	2150	Elapsed Time	11:43	20:10	28:41	37:11	45:31	53:59
							Lap Time		8:27	8:31	8:30	8:20	8:28
6	Marmon	J. Dawson	Nordyke & Marmon Co.	4½	5	2185	Elapsed Time	16:15	24:42	33:03	41:13	49:19	57:47
							Lap Time		8:27	8:21	8:10	8:06	8:28
7	National	A. W. Greiner	A. W. Greiner	5	5 11-16	2775	Elapsed Time	8:44	17:34	26:33	35:19	44:18	53:24
							Lap Time		8:50	8:59	8:46	8:59	9:06
5	Midland	R. Ireland	Midland Motor Co.	4½	5	2430	Elapsed Time	9:15	18:19	27:37	36:52	46:08	55:24
							Lap Time		9:04	9:18	9:15	9:16	9:16
4	Falcar	J. F. Gelnaw	Fal Motor Co.	4⅛	5¼	2180	Elapsed Time	9:10	18:05	27:09	36:03	44:52	53:52
							Lap Time		8:55	9:04	8:54	8:49	9:00
8	Lexington	R. Drach	Lexington Motor Car Co.	4½	5	2125	Elapsed Time	11:29	23:29	34:46	45:53	56:59	68:03
							Lap Time		11:30	11:17	11:07	11:06	11:04
3	Kisselkar	H. Endicott	H. P. Branstetter	4⅞	4¾	2245	Elapsed Time	9:57	19:44	29:34	39:02	49:15	58:59
							Lap Time		9:47	9:50	9:28	10:13	9:44

Captures Illinois Trophy Race



DAWSON IN NO. 6 MARMON AND DRACH IN NO. 8 LEXINGTON

SOLDIERS IN THE KISSELKAR TRUCK

nipped by Pearce. The latter dropped to third again in the seventeenth circuit, but regained his place in the next round and never lost it again. Dawson let Ireland get ahead of him in the twenty-second round, but after that the Midland man drifted back and was fourth in the twenty-third round and fifth at the finish, Greiner nipping him in the final circuit by a scant fraction of a second.

Undoubtedly Livingstone could have won his race by an even bigger margin than he did, but after going half the race at Vanderbilt speed he was advised to play safe and cinch the victory rather than to risk mishap by trying to establish a record. Cautioned from the pit, his fifteenth round showed 8:56, his sixteenth, 8:45, his seventeenth 8:48, his eighteenth 8:55, his nineteenth 8:23, his twentieth 8:23, his twenty-first 9:25, his twenty-second 8:43, his twenty-third 9:02 and his twenty-fourth 8:46. Comparing the times of Livingstone in the Illinois and Mulford in the Elgin National, the tables show that Livingstone went faster for twelve laps on Friday than did Mulford in the big race today. There wasn't much difference, however, the National figures being 96:34 as against 97:10 for Mulford. At the end of the fifteenth round, Livingstone still has the advantage of 52 seconds, but from this point on the Lozier has the advantage. A comparison of times of the two races for twenty-four laps, the distance of the Illinois cup event, shows that Livingstone did 201:08.53 for his twenty-four, while Mulford did 193:13.

Undoubtedly the new scheme of starting enabled Livingstone to put up the mark he did, although the National people were opposed to the idea when it was first broached. Holding the little cars for 20 minutes after the Illinois and Kane county cup races had been sent off gave Livingstone an opportunity to beat it, of which he took full advantage. The first 30 minutes of the race the No. 1 National was making phenomenal time because there were no small cars on the course during this time. It was during this time that Livingstone put up his 7:52, which was the fastest lap of either day and which was equal to 64.6 miles an hour. For the first half Livingstone averaged 63.07 miles per hour.

The performance of the Falcar driven by Pearce also was most noteworthy. The Falcar really was a Kane County car, having only a bore of 4⅛ and a stroke of 5¼ inches, but the Fal company saw more glory in going out of its class, so although originally entered in the Kane County, it changed its entry before the lists closed and elected to try for the harder honors. Pearce drove consistently and traveled faster the last half than did Livingstone by more than 3 minutes.

WHICH WAS WON BY AL LIVINGSTONE IN A NATIONAL, AVERAGING 60.6 MILES PER HOUR

7 59 miles 1,663 feet	8 67 miles 4,152 feet	9 76 miles 1,371 feet	10 84 miles 3,870 feet	11 93 miles 1,089 feet	12 101 miles 3,588 feet	13 110 miles 807 feet	14 118 miles 3,306 feet	15 127 miles 525 feet	16 135 miles 3,024 feet	17 144 miles 243 feet	18 152 miles 2,742 feet	19 160 miles 5,241 feet	20 169 miles 2,460 feet	21 177 miles 4,959 feet	22 186 miles 2,178 feet	23 194 miles 4,677 feet	24 203 miles 1,896 feet	Miles per hour
55:58	64:03	72:14	80:20	88:30	96:34	104:55	113:02	121:58	130:43	139:31	148:26	156:49	165:12	174:37	183:20	192:22	201:08 53-100	60.6
8:00	8:05	8:11	8:06	8:10	8:04	8:21	8:07	8:56	8:45	8:48	8:55	8:23	8:23	9:25	8:43	9:02	8:46 53-100	
62:58	71:10	79:54	90:38	99:29	108:42	117:37	126:12	134:40	143:12	151:40	160:05	168:36	177:13	185:51	194:26	202:58	211:19 22-100	57.02
8:59	8:12	8:44	10:44	8:51	9:13	8:55	8:36	8:28	8:32	8:28	8:25	8:31	8:37	8:38	8:35	8:32	8:21 22-100	
65:53	73:59	82:00	90:03	98:09	106:29	116:23	124:58	133:27	141:54	150:16	162:25	170:55	179:08	190:10	198:10	206:05	214:09 62-100	56.09
8:06	8:06	8:01	8:03	8:06	8:20	9:54	8:35	8:29	8:27	8:22	12:09	8:30	8:13	11:02	8:00	7:55	8:04 62-100	
62:24	71:23	79:58	90:10	98:27	120:13	130:52	139:06	147:22	155:40	163:57	172:13	180:36	188:57	197:25	205:34	213:52	222:15 30-100	54.8
9:00	8:59	8:35	10:12	8:17	21:46	10:39	8:14	8:16	8:18	8:17	8:16	8:23	8:21	8:28	8:09	8:18	9:23 30-100	
64:37	73:48	83:00	92:16	101:25	110:28	119:33	128:38	137:43	146:52	157:09	166:34	175:48	185:11	194:34	204:03	213:12	222:30 10-100	54.7
9:13	9:11	9:12	9:16	9:09	9:03	9:05	9:05	9:05	9:09	10:17	9:25	9:14	9:23	9:23	9:29	9:09	9:08 10-100	
63:20	72:12	81:03	89:46	98:35	107:21	130:52	139:36	148:23	157:07	165:05	179:22	204:21	213:11	221:59	Running at finish			
9:28	8:52	8:51	8:43	8:49	8:46	23:31	8:44	8:47	8:44	8:43	13:32	24:59	8:50	8:48				
79:07	90:05	101:01	111:55	122:58	133:55	144:57	156:01	167:01	178:03	195:00	201:53	212:54	224:00	Running at finish				
11:04	9:58	10:56	10:54	11:03	10:57	11:02	11:04	11:00	11:02	12:47	11:03	11:01	11:06					
68:34	77:59	87:28	96:46	Radiator		trouble												
9:35	9:25	9:29	9:18															

DAVE BUCK IN MARMON FIRST IN KANE COUNTY

TABLE OF RESULTS IN THE KANE COUNTY CUP RACE, WHICH WAS WON BY DAVE BUCK

No.	Car	Driver	Entrant	Bore	Stroke	Weight		1 8 miles, 2,499 feet	2 16 miles 4,998 feet
26	Marmon	D. Buck	Nordyke & Marmon Co.	4½	4½	2285	Elapsed Time	10:24	19:20
							Lap Time	10:24	8:56
24	Marion	A. Monsen	Chicago Marion Co.	4¼	4½	1935	Elapsed Time	9:27	18:36
							Lap Time	9:27	9:09
23	Marmon	L. Heinemann	Nordyke & Marmon Co.	4½	4½	2150	Elapsed Time	10:11	18:53
							Lap Time	10:11	8:40
22	Overland	A. Schillo	Overland Motor Co.	4¼	4¼	2010	Elapsed Time	11:12	22:24
							Lap Time	11:12	11:12
21	Corbin	J. Matson	Corbin Motor V. Corp.	4¼	4½	2040	Elapsed Time	8:39	25:06
							Lap Time	8:39	16:27
25	Kisselkar	G. Schoeneck	H. P. Branstetter	4¼	4¼	2080	Elapsed Time	10:24	20:48
							Lap Time	10:24	10:24
27	Cino	W. Fritzsch	Haberer & Co.	4⅜	5	2160	Elapsed Time	9:44	
							Lap Time	9:44	

ELGIN, ILL., Aug. 27—Dave Buck, of Chicago, only recently added to the Marmon team, won his spurs yesterday when he captured the Kane County trophy in a 169-mile race in which seven cars of the 231-300 class competed. Buck's performance was a most noteworthy one, and his average for the distance was 55.1 miles per hour. He had a margin of 3 minutes 7 seconds over his runner-up, Adolph Monsen in a Marion. The other Marmon, the one driven by Louis Heinemann, was placed third, and Schillo in an Overland got fourth. Monsen averaged 54.2 miles per hour, Heinemann 51.9 and Schillo 46.2. Four of the seven cars that started finished, and the winner went through without a tire change.

The three that failed to go the distance were the Corbin driven by Joe Matson, the Kisselkar handled by George Schoeneck and the Cino with W. Fritzsch at the wheel, which met with mishaps before half the race had been run. Matson went nine laps before a broken frame caused his retirement; Schoeneck went eight and then pulled out because of a broken piston rod punching a hole in his crankcase, while on his second time around Fritzsch in the Cino hit a telegraph pole at McQueen and was down and out.

The Cino accident was the first of the race. Fritzsch had made a good get-away and the end of the first lap showed him third to Matson's first and Monsen's second. At the McQueen turn he was running with two other cars, one of which was the Overland. These three cars were bunched approaching the turn and Fritzsch claimed he got the sign from the Overland mechanic to come ahead. But Schillo did not swing over, he asserts, and this left the Cino pilot the choice of going into the ditch or hitting the Overland. He chose the former, and hit a telegraph pole, bouncing from that into a wire fence. The Cino was so damaged in the mixup that the radiator was put out of commission and it was declared out. Fritzsch and his mechanic also were cut up some by the wire, but neither was seriously injured.

W. H. PEARCE, FALCAR DRIVER

The Kane County trophy race was the most interesting of the day from one viewpoint, that being the uncertainty that attended the running of the contest. It was no walkaway for any of them, five of the seven cars holding the lead at one time or other. The Corbin was the fastest on the first lap and then dropped to the tail-end of the field in the second, while Monsen in the Marion was at the top. The end of the third round saw Heinemann in first place with Buck second, and Monsen third. This standing held throughout the fifth lap, but in the sixth Buck forged to the front and staid there for six laps. Monsen and Heinemann fought for second place on this stretch, with the Marion man having the advantage. In the thirteenth lap Monsen caught Buck, who had to stop to fix his spring, and for five laps it looked as if the Marion might be the winner. Monsen had 3 minutes over Buck most of this time, but at the end of the seventeenth round the Marmon had again got to the front and Buck was 40 seconds ahead of the driver. He kept going and putting in three laps of respectively 8:21, 8:27 and 8:48 he opened up a considerable gap on Monsen, and at the end of the race was more than 3 minutes to the good, showing that he had gained nearly 4 minutes on the Marion in four laps.

While Buck and Monsen were fighting so hard for the lead, Heinemann in the other Marmon had been content to plug along in third place. He never was in any danger of losing this position, for he had

RESULTS IN THE FOX RIVER CUP RACE, FOR 161-230 CARS WHICH WAS

No.	Car	Driver	Entrant	Bore	Stroke	Weight		1 8 miles 2,499 feet	2 16 miles 4,998 feet	3 25 miles 2,217 feet
35	Benz	Hearne	E. A. Hearne	3½	5½	2210	Elapsed Time.	9:31	18:41	27:55
							Lap Time....	.....	9:10	9:14
37	Warren-Detroit	Miller	Warren M. Car Co.	4	4½	1700	Elapsed Time.	10:24	20:47	31:52
							Lap Time....	.....	10:23	11:05
36	Staver	Monckmeier	Staver Carriage Co.	4	4	1962	Elapsed Time.	10:59	37:36	46:48
							Lap Time....	.....	26:37	9:12
34	Staver	Crane	Staver Carriage Co.	4	4	2031	Elapsed Time.	10:34	20:52	31:18
							Lap Time....	.....	10:18	10:26
33	Cole	Endicott	Cole Motor Car Co.	4	4	1882	Elapsed Time.	10:22	20:10	29:45
							Lap Time....	.....	9:48	9:33
32	Staver	Cheney	Staver Carriage Co.	4	4	2000	Elapsed Time.	9:58	21:26	31:12
							Lap Time....	.....	11:28	9:46

FOX RIVER TROPHY GOES TO HEARNE IN BENZ

IN LITTLE MARMON WHICH SHOWED A PACE EQUAL TO 55.1 MILES PER HOUR FOR 170 MILES

3 miles 2,217 feet	4 miles 4,716 feet	5 miles 1,935 feet	6 miles 4,434 feet	7 miles 1,653 feet.	8 miles 4,152 feet	9 miles 1,371 feet	10 miles 3,870 feet	11 miles 1,089 feet	12 miles 3,588 feet	13 miles 807 feet	14 miles 3,306 feet	15 miles 525 feet	16 miles 3,024 feet	17 miles 243 feet	18 miles 2,742 feet	19 miles 5,241 feet	20 miles 2,460 feet	Miles per hour
27:52	36:29	45:14	53:57	62:42	71:56	81:15	90:11	99:04	115:11	125:05	133:33	141:57	150:36	159:09	167:30	175:57	184:45 79-100	55.1
8:32	8:37	8:45	8:43	8:45	9:14	9:19	8:56	8:53	16:07	9:54	8:28	8:24	8:39	8:33	8:21	8:27	8:48	
27:38	36:41	45:46	54:51	63:52	72:50	82:04	91:06	103:10	112:26	121:51	130:44	139:58	149:13	158:29	169:32	178:38	187:52 65-100	54.2
9:02	9:03	9:05	9:05	9:01	8:58	9:14	9:02	12:04	9:16	9:25	8:53	9:14	9:15	9:16	11:03	9:06	9:14	
27:35	36:24	45:10	54:34	63:51	73:14	82:36	91:22	114:22	126:17	137:23	146:05	154:39	163:10	172:42	181:20	190:16	199:20 27-100	51.09
8:42	8:49	8:46	9:24	9:17	9:23	9:22	8:46	23:00	11:55	11:06	8:42	8:34	8:31	9:32	8:38	8:56	9:04	
33:30	44:30	55:18	65:58	77:20	89:36	99:57	110:09	120:32	131:00	142:16	156:53	167:18	177:54	188:37	199:05	209:40	220:04 15-100	46.2
11:06	11:00	10:48	10:40	11:22	12:16	10:21	10:12	10:23	10:28	11:16	14:37	10:25	10:36	10:43	10:28	10:35	10:24	
33:35	42:24	50:57	67:15	76:03	84:53	97:46	Broken frame											
8:39	8:49	8:33	16:18	8:48	8:50	12:53												
30:40	40:34	50:18	60:02	69:52	79:47	Broken connecting rod												
9:52	9:54	9:44	9:44	9:50	9:55													

a big lead over Schillo, who was the only one running behind him after the ninth lap. While Schillo did not make any remarkable bursts of speed the tables show that his performance was a most remarkable one from a consistency standpoint. He ran with the regularity of an express train and with one or two exceptions he never varied from his 11-minutes-to-a-lap schedule from start to finish. The time at the end of his first lap was 11:12, at his second 22:24, at his third 33:30, at his fourth 44:30, at his fifth 55:18, and so on to the end, where the time for the complete race of twenty laps showed Schillo with 220:04 for the 169 miles 2,460 feet.

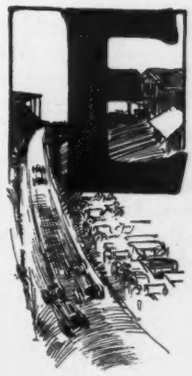
Matson in a Corbin was one of the favorites before this event started and when he finished the first lap in first place the spectators began to look for a repetition of Matson's performance at Crown Point last year when he captured the Indiana trophy. But Joe got into difficulties almost from the start and bothered by the broken frame he slumped to sixth place for the second and third round, then worked up to fifth, fourth and fifth, went back to fifth for the seventh and eighth. Then he began to climb a little and at the end of the ninth round he was in fourth place through the elimination of Schoeneck. At this point he was completely out of it so far as first place was concerned, being more than 16 minutes behind Buck, who was the leader, and because of the broken frame he officially chucked it at the end of the ninth lap and went to the pits.

Schoeneck in the Kisselkar was running fairly well when disaster overtook him. He had been in fourth place from the first lap on and was less than 8 minutes behind the leader at the end of the eighth circuit when the connecting rod broke and put the crankcase out of business.

MILLER IN WARREN-DETROIT

WON BY HEARNE IN A BENZ, WITH AN AVERAGE OF 54.1 MILES PER HOUR

4 miles 4,716 feet	5 miles 1,935 feet	6 miles 4,434 feet	7 miles 1,653 feet	8 miles 4,152 feet	9 miles 1,371 feet	10 miles 3,870 feet	11 miles 1,089 feet	12 miles 807 feet	13 miles 807 feet	14 miles 3,306 feet	15 miles 525 feet	16 miles 3,024 feet	Miles per hour
37:12	46:50	56:41	65:52	75:06	84:23	93:52	103:22	112:41	122:05	131:25	141:01	150:40	54.1
9:17	9:38	9:51	9:11	9:14	9:17	9:27	9:30	9:19	9:24	9:20	9:31	9:39	
42:20	52:47	64:14	74:19	85:17	95:38	105:36	115:36	125:14	135:07	146:24	162:27	176:11.62	46.1
10:28	10:27	11:27	10:05	10:58	10:21	9:58	10:00	9:38	9:53	11:17	16:03	13:44	
56:45	66:35	76:27	87:55	98:53	108:32	118:17	129:04	140:53	150:06	160:51	171:05	181:05.57	44.9
9:57	9:50	9:52	11:28	10:58	9:39	9:45	10:47	11:49	9:13	10:45	10:14	10:00	
41:43	52:09	62:43	73:18	83:33	93:56	104:22	114:32	128:39	139:48	150:10	160:40	Disqualified	
10:25	10:26	10:34	10:35	10:15	10:23	10:26	10:10	14:07	11:09	10:22	10:30		
39:26	49:16	58:47	68:19	78:02	87:38	97:17	106:57	116:40	126:19				
9:43	9:44	9:37	9:32	9:43	9:36	9:39	9:40	9:43	9:39				
46:07	67:08												
14:55	21:01												



ELGIN, ILL., Aug. 27—With only one chance out of thirty-four, Europe made good today when E. A. Hearne, of Chicago, driving a 30-horsepower Benz, a car of German manufacture, won the Fox River trophy, which was offered in the small-car race at 135 miles, in which the eligibility line ranged from 161-230 cubic inches piston displacement. The Benz was the one foreign car entered in any one of the four events, and from the start it divided favoritism with the Cole driven by Joe Endicott. But the final results showed that for once the public had not sized up the situation properly, for Hearne never left the result in doubt, leading from start to finish and beating the second car, a Warren-Detroit, by nearly 26 minutes. Of the six that started in the event, only three finished, the Staver driven by Monckmeier sliding into third place. Hearne averaged 54.1 miles per hour for the distance; Miller in the Warren-Detroit did 46.1 and Monckheier in the Staver showed 44.9 miles per hour.

Originally there were eight cars entered in the Fox River event, but the weighing-in yesterday afternoon resulted in the technical committee refusing to pass the two Fords which had been entered by the Ford Motor Co. This decision was caused by the failure of the two Fords to come up to the minimum weight of 1,400 pounds which has been set for the 161-230 class. There was no question as to the eligibility of the course as a stock-car proposition, but No. 38 Ford which was to have been driven by Jim Hatch hit the beam at 1,075 pounds, while Kulick's Ford was even lighter—950 pounds. Henry Ford positively refused to permit of bringing either one of his cars up to weight by the fitting of extra heavy seats which might have reached the coveted mark, Mr. Ford declaring that the Fords

WHITE AND BUICK TRUCKS USED IN CARRYING ROAD RACE PROGRAMS AROUND COURSE

he had offered were stock cars and that it would be going directly against his principles of light-weight construction if he added extra weight in this manner. The decision of the technical committee was appealed by Thomas J. Hay, manager of the Chicago Ford branch, but the referee refused to reverse the technical committee's finding, which ended the Ford incident.

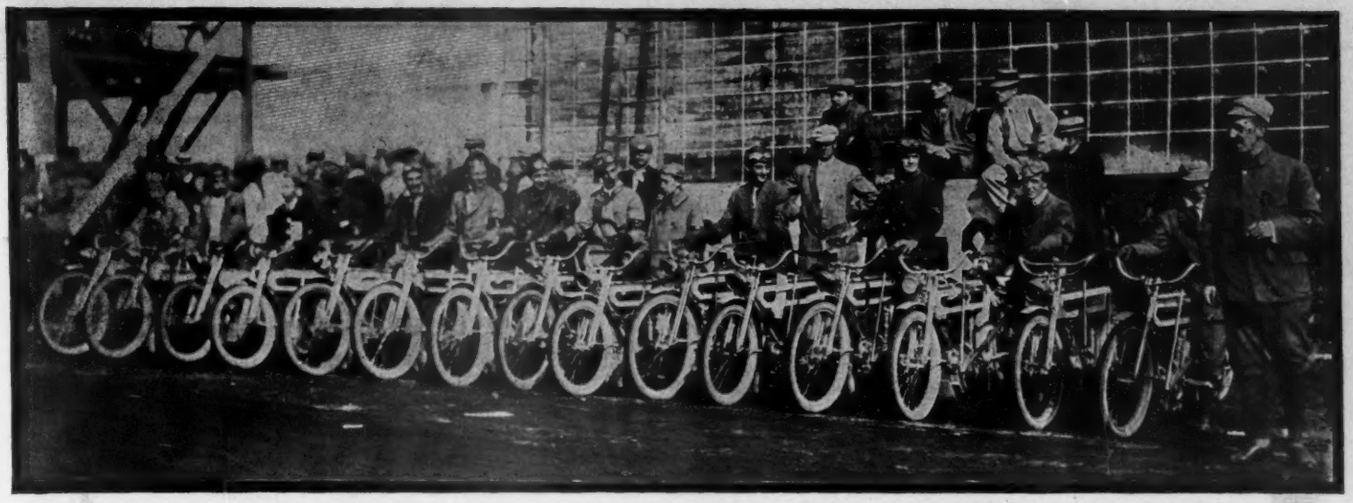
The Chicago Motor Club brought about an innovation in the starting of three races to be run simultaneously. Instead of starting the Fox River first, and then following with the other two as if all three were in one field, the 301-450 class was sent away at 30-second intervals, followed immediately by the Kane County cars. Then there was an intermission of 20 minutes before Cheney in No. 32 Staver in the Fox River got away. The idea in this was to have as many cars running at the finish as possible and thus add to the interest. The scheme worked out well and all three of these races came to an end at almost the same time.

While the Illinois and Kane County events were getting under way and were running the little cars were lined up at the east end of the pits awaiting the signal from the starter. In this line were No. 32 Staver, with Cheney driving; No. 33 Cole, Bill Endicott driving; No. 34 Staver, with Ned Crane up; No. 35 Benz, with Hearne at the wheel; No. 36 Staver, with Monckmeier pilot, and No. 37 Warren-Detroit, with Miller driving. There was no confusion in getting the Fox River race away in this unusual manner, and each of the 161-230 candidates swung into the speed maelstrom without a hitch. Hearne lost no time, and the first lap showed him with a 27-second lead over his closest competitor, Cheney in the Staver, with the Cole third, the Warren-Detroit fourth and the Crane Staver and Monckmeier Staver running fifth and sixth. In the next round Endicott became the runner-up to Hearne, but the latter had picked up even a bigger margin than he had the first round and was 1 minute 19 seconds to the good. Ned Crane had jumped from second to third place and the little field was running along at a good clip. From this point on to the end of the thirteenth lap, Endicott pursued Hearne, but without being able to make up anything on the Chicago Motor Club's star who had his man by 4 minutes at the completion of the century. Crane and Miller battled for third place with Crane having the edge to the end of the eleventh lap where Miller passed him, holding third position for two laps when the elimination of the Cole sent the Warren-Detroit to second place. The fifteenth round saw Crane in second place and with one more lap to go it seemed as if the Staver-Chicago would be runner up to the Benz, which had the race cinched unless some unforeseen accident bobbed up and stopped him. This, however, did not occur, and Hearne came home under double wraps.

Interesting Sidelights on the Races

Crane only had one more lap to go and was nearly 2 minutes ahead of the Warren-Detroit when the car was disqualified because the mechanic had failed to look around and watch for approaching cars. This was classed as foul driving and it occurred approaching the pits. Crane had thundered down the home stretch with the idea of making a stop at the pits before starting on his final round. Back of him and coming with the speed of an express train was Greiner in his National. Crane's mechanic, it was claimed, failed to look around and warn Greiner of his intentions to stop at the pits and because of not receiving this signal Greiner of course held the left side of the road in order to pass the Staver in front of the grand stand. Instead of staying on the right of the track Crane made for the pits and had Greiner in a most awkward predicament, pinned in between the ditch and the Staver. It looked like an accident, but Greiner by a wonderful exhibition of driving skill swung to the right and just missed hitting the Staver. Referee Beecroft observed the incident and as all the drivers and mechanics had been particularly warned on the necessity of the mechanic looking around and watching the road back of him, he immediately disqualified the car. This left an opening for the Warren-Detroit to slip into second place, which it did by a comfortable margin over the third Staver, which was driven by Monckmeier and which finished nearly 5 minutes later, and in time to catch the judge's eye.

SCHILLO IN OVERLAND THAT PUT UP CONSISTENT PERFORMANCE



FLAGMEN AND MESSENGERS WERE MOTOR CYCLISTS OF THE CLAN EXCELSIOR

Discovered Around the Repair Pits

NO better encomium could be desired for present motor car construction than the fact that out of twenty-one cars which started in the Illinois, Kane County and Fox River trophies on Friday, twelve completed the races. There is special satisfaction in the fact that this made a new record for American road races, and it is a great honor to the cars which competed. Livingstone, driving No. 1 National, did not stop from start to finish in his 203.35-mile Illinois race; Hearne, driving the Benz, did not stop from start to finish in his 135.57-mile Fox River run; but Buck, winner of the Kane County trophy, was compelled to halt his Marmon twice. He made his first stop at the end of the first lap, having lost a key for his Bosch ignition outfit. He took on a new one at the pit. A little more than 1½ hour later he had broken the left rear spring hanger, and although running at high speed he was signaled to stop at the grand stand in order that the technical committee might examine the spring to see if it were safe enough to continue. This examination consumed 1 minute 30 second, during which time the spring was strapped to the bumper and the race finished in this manner.

W. H. Pearce, who finished second in a Falcar in the Illinois trophy, made one of the remarkable performances of the day. The work of the car was a surprise to thousands who watched it. He made but one stop, and that at the end of the first lap to change some spark plugs. With the exception of this lap his running was remarkable for its consistency, excepting in the twelfth lap, where he lost some time due to a flying stone breaking his goggles and before he got fixed up he had used a couple of additional pairs on the same lap. With the exception of this delay every lap was made in 8 minutes and a few seconds. Of the twenty-four laps, twenty-one were made in approximately 8 minutes 30 seconds, or close to 60 miles an hour. His first lap in 11:43 was an average of 3 minutes slower than all others, this being due to his stop to take out spark plugs. His running mate, Gelnaw, in another Falcar, lost his chances of finishing because of breaking his gasoline line in the thirteenth lap, at which time 15 minutes were spent repairing the break.

Joe Dawson, driving a Marmon, and who finished third in the Illinois, lost his chances in the first lap, which required 16 minutes 15 seconds to complete. After this all of his laps were made around the 8-minute mark with the exception of three. Only once did Dawson drop below the 8-minute pace, and that in the twenty-third lap, when he made the circuit in 7:55, or at 64.2 miles per hour, a remarkable pace for a car with a motor of 4½-inch bore and 5-inch stroke. In Saturday's race Mulford only made one lap faster than this pace, which he negotiated in 7:54. Livingstone, however, made two laps under this mark, namely 7:52 and 7:54.

No. 5 Midland, driven by Ireland, stopped but once on its circuit of 203.35 miles, and that in the seventeenth lap, when 1 minute was lost taking on gasoline and water. Outside of this fact the Midland performance was most remarkable. Its fastest lap was 9:03; its slowest 9:29, leaving a variation of but 26 seconds between its fastest and slowest laps in twenty-three circuits. Doing a lap in 9:03 was at 56.1 miles per hour.

Greiner driving No. 7 National, had some difficulties, one being the loss of many minutes in the twelfth lap, when his gasoline line broke and he had to change a rear tire. His time for this lap was 21:46. Greiner's fastest lap was his twenty-second, which he made in 8:09, or at 62.3 miles per hour.

Drach, driving the Lexington, made a performance which for consistency compares well with any other car on the circuit. This car was new, was very stiff, and had not been worked in. It had completed twenty laps and was running at the finish. It did not make a stop throughout the race. Its lap time was generally 11 minutes 6 or 7 seconds, excepting for laps nine, ten and twelve, which were below the 11-minute mark. Lap eight was negotiated in 9:58, or at 51 miles per hour.

No. 3 Kisselkar, driven by Endicott, ran a consistent race until out of the eleventh lap because of radiator trouble. Its laps were all made at approximately a 9:30 clip, its fastest being 9:18, or at 53.5 miles per hour.

In the Kane County trophy Monsen, who finished second, performed with remarkable consistency from start to finish. With two exceptions his laps were all made at a few seconds over the 9-minute mark, and

MILLER IN WARREN-DETROIT, SECOND IN FOX RIVER

(Continued on Page 19)

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The Proper Public Spirit

AFTER the first Savannah road race, when the militia had kept the entire course clear throughout the race, the critics admitted that it had been done, but were loud in acclaiming that the south was the only section in the country in which the roads could be cleared by the soldiers, and that the inhabitants of the northern states would not pay any more attention to the soldiers than the Vanderbilt crowds have paid year after year to the deputy sheriffs. This declaration that the people of the northern states could not be kept off the roads during a road race meant that either the soldiers in the north were not so good as those in the south or that the public living north of the Mason and Dixon line were not so respectful of the laws of the land, and had not that respect for the national guards which they should have. Last week on the 8.5 miles of Elgin road race course, located just 1 mile from the heart of Elgin, Ill., and not 50 miles from Chicago, 200 soldiers from the Fifth Illinois National Guard not only kept the course clear from 1 hour before the race started until twelve cars had finished, but once more proved to the northerners that soldiers are the only means of keeping road race courses clear, and that the citizen soldiery of this country is just as effective at this service as any of the European regiments that have been doing such services for years in their lands.

SINCE the advent of the Vanderbilt cup race in America there always has been a standing insult charged against the efficiency of the American soldier, and a standing acknowledgment respecting the law-abiding instincts of the American citizen. New Yorkers have declared persistently that troops or no troops the New Yorkers could not be kept off the Vanderbilt cup course; that the best regiment in the land would not be able to keep the crowds back, and that the curiosity-seeker from Manhattan would not have any more regard for the soldier than he has shown in times past for the Long Island sheriff, which has been nothing. This declaration is a standing insult to the American militia. Before the Crown Point races a year ago the doubting citizens of Chicago said the First Illinois National Guard could not keep the course clear, but it did and kept it as clear as ever did the Georgia troops the Savannah course. It was then urged that no other regiment but the First could have done it. To prove the fallacy of this declaration, the First was not available for duty last week at Elgin and so the Fifth was selected. As soon as it was announced that the Fifth would guard the course rumors were spread to the effect that the crowds would not pay any attention to those soldiers. What is the result? Never in this or any other country was the soldier better shown that obedience which he should command. From start to finish not a citizen resisted his directions, and never was a course kept cleaner, not only until the finish of the last car, but for 10 minutes more, so that one other car running on the course could be flagged off. This proves that the citizen of the north is a law-abiding one, respectful to authority and a desirable citizen. The people of Chicago, Illinois, Wisconsin and Indiana have set an example to the entire north, and if New York will only get the troops for the Vanderbilt it is an assured fact that the course will be kept clear. The authority of the militia must be respected and there is no better time to get the public familiar with the militia than on occasions of this nature. Soldiers are generally considered agents of war, but the use of the militia for road racing has introduced the army into the field of industry. This is excellent and could be imitated in other lines of industries where necessary.

Symmetry in the Car

A FEW weeks ago when addressing the members of the Society of Automobile Engineers at Detroit, President Howard Coffin, of the society, in speaking on the possibilities of increasing motor efficiency by the use of rotary or sleeve valves, or long-stroke designs, commented that if it were possible to secure so much more efficiency by such designs then it would be ruinous to adopt the desired improvements without redesigning the entire motor and car, on the ground that the additional efficiency would impose so much extra strain on the parts as to force them to give way. He went on further to state that the procuring of much higher efficiency must be a gradual step and not a sudden jump. That maker who added a motor of vastly higher efficiency to his present running gear would find himself up against continual troubles because of the powerful motor working havoc with the gearbox, the rear axle, the running gear and other parts which had not been strengthened in proportion with the motor.

THE wisdom of this remark has already been demonstrated. Some few makers have been developing to a marked degree their present stock motors and have so improved the crankshaft speed as to increase it 50 per cent. This higher motor speed has of necessity imposes a terrific strain on the connecting rods, cylinders, crankshaft, crankcase and other parts of the motor, which in not a few cases have given way under the strain. The situation calls for a general increase in the strength of the parts above mentioned, as well as adding to the bearing surfaces. This lesson was admirably demonstrated at the Elgin national stock chassis races last week. Several cars went out early in the race simply through causes of this nature. To those not familiar with road racing it will be of interest to state that the speed of a car may be vastly increased without eliminating its stock features and characteristics. The rules governing road racing realize that the conditions are abnormally severe as compared with the use given a touring car in the hands of the owner, and because of this some changes are added, such as allowing the removal of piston rings and making the piston diameter smaller, this in conjunction with the proper adjustment of all of the bearings, the removal of every trace of carbon, the perfect grinding of the valves, the desired adjustment of the carbureter, etc., makes it possible to give much additional speed.

TWO or three makes of cars in the Elgin races had seized pistons, due undoubtedly to the increased motor speed and the lack of enough lubricant at the new speed. In other cases a connecting rod broke. At some of the stock car races last year the base flanges on the cylinders were too weak for the heavy strain of the increased power. This year's races proved that even yet with concerns new in the racing field there are many car parts too weak for high-speed work. Several wheels gave way in the Elgin races, and strange to state the strength of these wheels was challenged by the technical committee when inspecting the stock requirements of the cars. One car went out through radiator troubles, due to a construction which had been called attention to before the race began. In one case it was a frame member that broke, another fractured a steering knuckle and a third had motor troubles. All of the troubles were due to lack of strength or defective designs, with perhaps one or two connecting rod breakages which might have been caused by lack of oil or a broken piston ring.

SPIRITED RACING EXPECTED AT SPEEDWAY

INDIANAPOLIS, IND., Aug. 31—Special telegram—About thirty cars have been entered in the race meet to be held at the Indianapolis motor speedway Saturday and Monday. As the various drivers so far have not indicated the events in which they expect to participate, it is impossible at this time to obtain the specific entries for each event. Among the drivers will be Ralph de Palma in his Fiat and Eddie Hearne in a Benz. Hearne won the speedway helmet at the July meet, and is expected to contest for the helmet Saturday. Other cars nominated are Midland, Firestone, National, Marmon, McFarlan, Parry, Cole, Matheson, Herreshoff, Westcott, Black Crow, Hudson and Staver.

The principal events Saturday will be the 10-mile free-for-all for the speedway helmet, a free-for-all 100-mile race and a 100-mile race for cars under 450 cubic inches piston displacement for the Remy brassard and trophy. On Monday the principal event will be a 200-mile race for cars of 600 inches and under, in which the prizes will aggregate $2,400. The first prize will be $1,000 and $300 additional if a Bosch magneto is used. There will also be a 50-mile free-for-all event.

WORK DONE AT THE PITS

(Continued from page 17)

twice did he drop below this figure—once doing the circuit in 8:58 and another time negotiating it in 8:53, or at 59.2 miles per hour. His average for the entire distance was 54.2 miles per hour. The slowest lap was at the eleventh, which was made in 12:04.

Heinemann, who finished third in this contest, had trouble in lap eleven, which required 23 minutes to make. His only stops at the grand stand were changing spark plugs and attaching an ignition wire.

A. Schillo, driving the Overland and finishing in fourth position at an average of 46.2 miles per hour, ran most consistently at the 10:30 mark. His only variation was in lap fourteen, when he stopped at the pits for water and oil. Laps seven and eight were slow because of stopping at the request of the technical committee because of loose tire brackets. With these three exceptions his total variation in laps during the race was approximately :58.

Matson in the Corbin, Schoeneck in the Kisselkar, and Fritzsch in the Cino would all have been fighting factors in this race had they not been eliminated, the first two for broken parts and the third being ditched when overtaking a competitor.

COMING MOTOR EVENTS

September 3-5—Speedway meet at Indianapolis.
September 3—Reliability run of North Wildwood Automobile Club, Wildwood, N. J.
September 5—Track meet at Wildwood, N. J.
September 5—Track meet at Cheyenne, Wyo.
September 5—Road race of Denver Motor Club, Denver, Colo.
September 5-10—Track meet at state fair, Minneapolis, Minn.
September 7-9—Four-day reliability run of Automobile Club of Buffalo.
September 9-10—Track meet at Providence, R. I.
September 10—Automobile Club of San Francisco road race, Golden Gate park.
September 10—Mount Baldy road race, Los Angeles, Cal.
September 10-11-12—Track meet at Seattle, Wash.
September 16—Annual hill-climb of Chicago Motor Club at Algonquin, Ill.
September 17—Track meet, Syracuse, N. Y.
September 17—State fair track meet at Syracuse, N. Y.
September 18—Track meet at Syracuse, N. Y.
November 24—Santa Monica road race of Licensed Motor Car Dealers of Los Angeles, Cal.
October 1—Vanderbilt cup race.
October 3—Reliability run of Louisville Automobile Club, Louisville, Ky.
October 6-7—Fall interclub reliability team match between the Chicago Automobile Club and the Chicago Athletic Association.
October 7-8—Speedway meet at Los Angeles, Cal.
October 6-7-8—Track meet at Santa Anna, Cal.
October 8—Fairmount Park road race, Philadelphia, Pa.
October 15-November 2—Show in Paris promoted by Aeronautical Society.
October 15-16-17-18—Annual 1,000-mile reliability run of Chicago Motor Club.

SURVEY MAKES REPORT

Milwaukee, Wis., Aug. 28—Since July, 1907, when the highway division of the Wisconsin Geological Survey first offered free advice and instructions to townships of Wisconsin contemplating road, bridge and culvert improvements, more than $140,000 has been expended for road construction alone under the direction of the survey. A report of the work accomplished in the last 3 years has just been issued by W. O. Hotchkiss, chief of the highway division. The first year, from July 1, 1907, to July 1, 1908, was spent in organizing a force and making the work known to the people by means of speeches, literature and demonstrations. This kind of work is still being done, but to a lesser degree. From July 1, 1908, to July 1, 1910, the work done by the four engineering experts employed by the highway division is as follows: Ninety road surveys totalling 65 miles in length, made in twenty-six counties; 114 road inspections were made in thirty-two counties; 257 public speeches were made in sixty-three counties; $140,000 worth of road construction was done under the division's plans and auspices; 277 bridge inspections were made in sixty-four counties; 130 bridges and culverts, costing $175,000, were built under the division's plans and auspices. In addition, much work has been done under advice by letter or direct from information contained in the road pamphlets issued by the division.

BANQUET OF CHICAGO MOTOR CLUB AT THE C. A. A. WHEN ROAD RACE PRIZES WERE DISTRIBUTED TO THE FOUR WINNERS
IN PICTURE 1 IS BUCK, 2 HEARNE, 3 LIVINGSTONE AND 4 MULFORD

MAXWELL DECLARED MUNSEY TOUR WINNER

WASHINGTON, D. C., Aug. 30—Special telegram—After a prolonged examination extending over 3 days No. 25 Maxwell finally was evolved winner of the sweepstakes of the Munsey historic tour, incidentally winning the trophy in division 3A. Only 3 points could be assessed against Wall's car on the final technical examination. They were for a lost fan belt.

ORDER OF MERIT IN MUNSEY TOUR

No.	Car	Driver	Total
25	Maxwell	Walls	3
34	Ford	Cheny	7
24	Stoddard	Shaaf	12
11	Corbin	Bailey	16
10	Warren-Detroit	Berger	19
6	Washington	Arrison	20
5	Washington	Carter	26
14	Brush	McCoy	26
13	Brush	McKenney	33
8	Ford	Miller	35
30	Ford	Peabody	36
2	Columbia	Wagner	40
22	Cino	Donnelly	46
31	Kline	Fairman	50
17	Enger	Frisch	52
21	Ohio	Henwood	103
33	Matheson	Hall	122
29	Inter-State	Dill	131
16	Pierce-Racine	Strang	148
32	Moon	Upton	200
23	Staver	Knutsen	249
27	Crawford	Miller	891
18	Great-Western	LaMar	2284
19	Krit	Crittenden	*
15	Regal	LaRoche	*
26	Maxwell	Fleming	*
28	Glide	Cassel	*

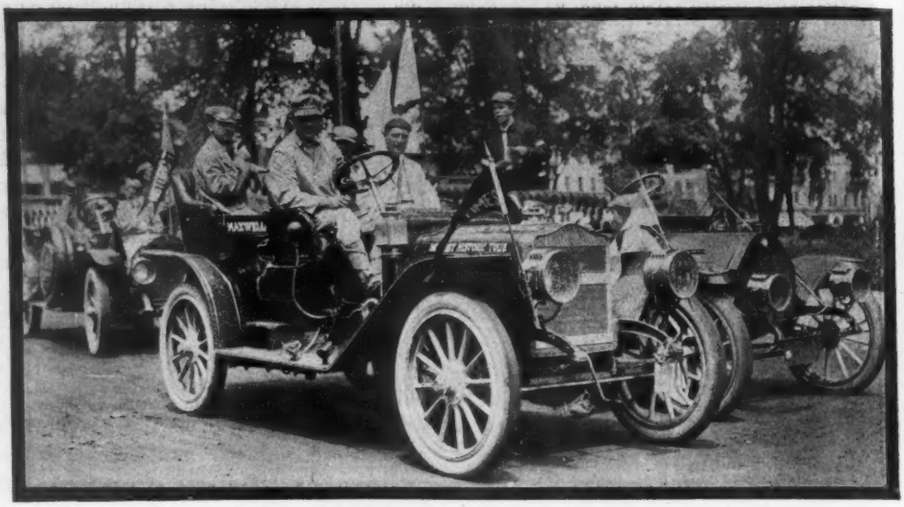
* Withdrawn

Washington, D. C., Aug. 29—Covered with the dust of ten states through which they had passed, the contesting column of motor cars in the Munsey historic tour of 1910, that started from Philadelphia August 16, paraded through the streets of Washington late Saturday afternoon, escorted by nearly 100 flag-decked and spotless machines belonging in the capital city. There were two absentees, the Glide entry, which could not be repaired in time to reach Washington, on account of the distance from which the spare parts had to be shipped, and the Elmore.

The Krit, Maxwell runabout and Regal cars, which withdrew at various places along the route and continued as non-contestants, were all in line and running smoothly. The Elmore, owned and entered by Frank Hardart, of Philadelphia, which was disqualified by reason of the failure of the factory management to file its stock certificate covering the car, broke a spring near Harrisburg and could not finish. The Great Western, Crawford and Staver-Chicago, which were heavily penalized on the road, finished the tour with a fine showing of power and running quality.

The two contesting Brush runabouts, three Fords, Warren-Detroit, Maxwell touring car, Moon, two Washingtons, Pierce-Racine, Enger, Ohio, Inter-State, Columbia, Corbin, Cino, Stoddard-Dayton, Klinekar and Matheson, seven of which had earned some sort of a penalty, constituted the main division of the tour, and were given ovations all along the line.

The official cars also were accorded their full share of the honors. The diminutive Brush runabout, which carried the official photographer and which unofficially came through with a clean road and mechanical score; the Selden, which carried confetti from one end of the route to the other without skip of any kind, under the guidance of J. D. Murphy; the two E-M-Fs, which acted respectively as pilot and press cars, and which monopolized all the real accidents of the tour outside of the mishap to the Great Western; the starter's car, an Ohio, which had better luck on the road than its team mate in the contesting division, having a spotless record; the Washington car, which carried a part of the press representatives and which was driven by Jack Welsh without even a semblance of tire trouble; Referee Ferguson's carriage, a Columbia, which made the run without unofficial penalization, and the Thomas Flyer, guided by the hand of George R. Miller, the same engineer who steered the car when it won the famous race from New York to Paris, were all repeatedly cheered on the way to their resting place in the official garage.



MAXWELL, DRIVEN BY WELLS, WINNER OF MUNSEY HISTORIC TOUR

At the finish of the road work, thirteen cars had perfect scores, according to final announcement. These were: Columbia, two Washingtons, two Fords, Corbin, Brush, Enger, Cino, Stoddard-Dayton, Maxwell, Kline, and the Matheson.

Four cars were penalized for the last day's work, as follows: Warren-Detroit, 11 points for work on stay rod and magneto, bringing its total to 15 points. Great Western, 66 points for lateness at noon

TABLE SHOWING THE PENALIZATIONS HANDED OUT TO CONTEST

	Name of car	A. L. A. M. H. P.	No. of Cyl.	Cyl. Bore	Piston stroke	Car model	Entrant
						CLASS 1A, SELLING UNDER $800	
13	Brush	6⅜	1	4	5	D	Frank Briscoe.
14	Brush	6⅜	1	4	5	D 26	Frank Briscoe.
19	Krit	21	4	3⅝	4	A	Krit Motor Car Co.
						CLASS 2A, SELLING FROM $801 TO $1,200.	
8	Ford	22½	4	3¾	4	T	Chas. E. Miller & Bro.
26	Maxwell	22½	4	3¾	4	Q	Max.-Briscoe Motor Car Co.
30	Ford	22½	4	3¾	4	T	Ford Motor Co.
34	Ford	22½	4	3¾	4	T	Ford Motor Co.
						CLASS 3A, SELLING $1,201 TO $1,600	
10	Warren-Detroit	25⅜	4	4	4½	A 108	Taylor Motor Dis. Co.
15	Regal	25⅜	4	4	4	E	Regal Motor Car Co.
18	Great Western	28 9/10	4	4⅛	5	30	G. W. Auto Co.
23	Staver-Chicago	25⅜	4	4	4	H	Staver Carriage Co.
25	Maxwell	28 9/10	4	4¼	4¼	E	Max.-Briscoe Motor Car Co.
27	Crawford	28 9/10	4	4¼	4½	1911	Crawford Auto Co.
32	Moon	28 9/10	4	4¼	5	30	Moon M. C. Co.
						CLASS 4A, SELLING $1,601 TO $2,000	
5	Washington	27¼	4	4⅛	5¼	C 40	Carter Motor Car Co.
6	Washington	27¼	4	4⅛	5¼	C 40	Carter Motor Car Co.
16	Pierce-Racine	28 9/10	4	4¼	5	K	Pierce Motor Co.
17	Enger	30 6/10	4	4⅜	4¾	40	Enger Motor Car Co.
21	Ohio	28 9/10	4	4¼	4¾	40 A	Ohio Motor Car Co.
29	Inter-State	32⅜	4	4½	5	34 A 1911	Inter-State Auto Co.
						CLASS 5A, SELLING $2,001 TO $3,000	
2	Columbia	32⅜	4	4½	4 7/10	48	Columbia Motor Car Co.
9	Elmore	32⅜	4	4½	4	46	Frank Hardart.
11	Corbin	32⅜	4	4½	4¼	18	Corbin M. V. Co.
22	Cino	25⅜	4	4	4⅜	A	Haberer & Co.
24	Stoddard-Dayton	36 1/10	4	4⅜	5	10 K	L. H. Shaab.
28	Glide	36 1/10	4	4¾	5	Spec. 45	The Bartholomew Co.
31	Klinekar	40	6	4 3/32	5	1911	B. C. K. M. Co.
						CLASS 6A, OVER $3,000	
33	Matheson	48⅜	6	4½	5	18	Matheson Motor Car Co.

WITH FORD SECOND AND STODDARD THIRD

CHENEY'S FORD, WHICH WAS SECOND IN THE MUNSEY TOUR

control and work in repairing a spring, a total of 2,229 points. The Ohio, 3 points for work on a rod, giving this car a total of 79 points. The Moon also earned one more demerit for motor stop, making its total 3 points for its work on the road.

At the conclusion of the run the cars were turned over to the technical committee for a most searching examination. It was estimated that it would require an average of 45 minutes' work on each car to determine its exact condition as compared with its shape when commencing the tour.

The Regal entry's trouble was a broken spring, the accident occurring near Bloomsbury. The repair work was accomplished so quickly that much regret was expressed that the car did not continue in the contesting division, as the penalization would have been much lighter than the 1,000 points charged for its withdrawal.

The technical committee, consisting of E. L. Ferguson, James Hemstreet and Joseph Tracy, went to work immediately on the cars, and, following the spirit that has actuated the officials since the beginning of the run, they announced that the final standing would be ready for publication on Tuesday.

It was a delightful affair from start to finish. Referee Ferguson was on the job every minute, formulating his rulings with refreshing promptness and keeping up to the minute with his tabulations. As a general thing, the score for each day's run was formed and posted 10 minutes after the last car arrived, if it arrived within its schedule. If a contestant was late Mr. Ferguson usually knew why long before the car arrived, and consequently there were none of the exasperating delays that have marked the administration of other tours.

There was no real kicking. Occasionally, when a penalty was imposed, the sufferer muttered a few things, but in a short time he realized that a tour of this kind is a battle, and the unfortunates who fall because they choose to do a gallant deed or through accident where the other fellow is to blame are just as dead as those who are shot down for running away.

There was a spirit of do or die that characterized the driving of all the cars. Not that it was reckless or foolhardy, but each driver seemed to have resolved upon setting out that he would take his car through without penalty, if possible—but he would take her through.

Speaking of the drivers of the contesting cars, the following accident was amusing and illuminative. When the cars drew into Bethlehem, N. H., and the tired drivers and crews alighted and were being assigned to rooms in the Sinclair house, a New York butter and egg operator who is said to be close to the front in that line edged up and said:

"I see a dozen fellows among those drivers who have exceptional faces; clean-cut brows and firm chins. They show in their appearance that they have the possibilities of taking and holding much higher positions than the mere driving of motor cars. I should say that all of those men there"—indicating a group of drivers—"might become first rate butter and egg salesmen if they showed a willingness to work hard."

The men included in the group pointed out by the butter and egg man were: A. G. Carter, of the Carter Motor Car Co., who had three cars in the tour; Leo Shaab, president of the L. H. Shaab Auto Distributing Co., of Baltimore; I. W. Dill, of the Inter-State Automobile Co., of Harrisburg; W. S. Mercer, a director of the Great Western Automobile Co., of Peru, Ind., and Charles E. Miller, of Charles E. Miller & Brother.

Binghamton to Wilkes-Barre

Wilkes-Barre, Pa., Aug. 25—As expected by those who had knowledge of the roads between Binghamton and this city, the ninth day of the Munsey tour proved a strenuous trial. The highways were largely made by the soldiers under command of General Sullivan during the revolutionary war and the tourists frequently wondered why no apparent effort had been made to improve them in spots since that day.

Starting from Binghamton the road for nearly 15 miles was level as a floor and smooth as a billiard table, but from there to Tunkhannock, where a gasoline control

ANTS IN MUNSEY TOUR, WON BY MAXWELL DRIVEN BY WALLS

Driver	No. of passengers	Ignition	Tires	Road penalties	Brakes	Clutch	Transmission	Motor	Final technical	Total
E. McCoy	2	Bosch	Ajax	3	0	0	0	0	30	33
R. R. Kenney	2	Bosch	Ajax	0	0	0	0	0	26	26
K. Crittenden	2	Bosch	Diamond	1,000	withdrawn					
C. E. Miller	2	Ford	Firestone	0	6	0	0	0	29	35
C. Fleming	2	Splitdorf	Ajax	1,000	withdrawn					
F. H. Peabody	2	Ford	Firestone	8	1	0	0	0	27	36
J. A. Cheny	2	Ford	Goodrich	0	0	0	0	0	7	7
Tom Berger	4	Bosch	Firestone	15	0	0	0	0	4	19
La Roche	2	Remy	Empire	1,000	withdrawn					
C. La Mar	5	Remy	Goodrich	2,229	38	0	0	0	17	2,284
E. T. Knutsen	4	Bosch	Diamond	242	0	0	0	0	7	249
H. E. Walls	5	Splitdorf	Ajax	0	0	0	0	0	3	3
A. A. Miller	4	Remy	Goodrich	867	7	0	0	0	17	891
R. M. Upton	3	Bosch	Firestone	3	29	0	0	0	168	200
A. A. Carter	2	Bosch	Republic	0	2	0	0	0	24	26
W. D. Arrison	2	Bosch	Republic	0	12	0	0	0	8	20
L. Strang	5	Remy	Diamond	42	0	0	0	0	106	148
H. Frisch	5	Eisemann	Falls	0	32	0	0	0	20	52
Moss Henwood	5	Splitdorf	Goodrich	71	15	0	0	0	17	103
I. W. Dill	4	U. & H.	Mansfield	111	7	0	0	0	13	131
G. M. Wagner	4	Bosch	Ajax	0	14	0	0	0	26	40
A. S. Hardart	7	Atwater	Goodrich		withdrawn					
T. T. Bailey	4	U. & H.	Diamond	0	11	0	0	0	5	16
J. Donnelly	5	Remy	Diamond	0	39	0	0	0	7	46
Leo Shaaf	4	Bosch	Goodrich	0	0	0	0	0	12	12
Fred Cassel	4	Eisemann	Goodyear	1,000	withdrawn					
C. Fairman	5	Bosch	Firestone	0	21	0	0	0	29	50
D. A. Hall	5	Bosch	Firestone	0	102	0	0	0	20	122

STODDARD-DAYTON WHICH WAS FOURTH IN MUNSEY TOUR

had been established, it would be hard to find a more trying stretch of highway. There were some good roads in the afternoon run, but owing to loose construction of the automatic map used, an error was made in selecting the path and as a result some bad roads were cut out and some more were added. The effect was to shorten the run several miles, which was not a disagreeable thing as far as the contestants were concerned. The day's run was only 88.7 miles and all the cars reached night control within their time limits, and without any trouble, to speak of.

The Pierce-Racine fell out of the list of clean-score cars during the day when a gasoline pipe broke and required 10 minutes' work on the road to repair the damage. As the crew received assistance from outside, the penalty charged was 30 points. The Ohio was given 5 points for minor battery trouble. The Great Western, No. 18, is running along with the procession again, apparently in good fix. The penalization of the car for its mishap east of Burlington, Vt., is 620 points for lateness at control; 1,530 points for work and 11 points for fixing the accelerator, a total of 2,161, earned solely and entirely by reason of the choice of the driver to wreck his car rather than take a chance of injuring a woman.

In the Home Stretch

Harrisburg, Pa., Aug. 27—At the head of the home stretch, 1 day out from the goal, Washington, D. C., the contesting cars with clean scores were reduced in number by one when the Regal entry collapsed and was withdrawn. This car had a clean score of the aggressive kind right up to the minute of withdrawal and had impressed the officials with its worth and sturdiness. At this hour the exact trouble with the car has not been reported.

The run into Harrisburg was over dirt roads that were excessively rough in spots and the grades were very sharp and almost continuous. The course lay along the Susquehanna river for many miles and the peculiar light blue of the water attracted much attention. This quality has been induced by refuse from the coal mines over which the stream flows. Instead of turning the rocks in the river black as might be supposed, the effect of the coal is to cover them with a coat of glistening white, remarkably beautiful in contrast with the metallic blue of the stream.

The penalizations for the day's run were not important except as applied to the Regal. The Pierce-Racine was given 12 points more for work on its damaged gasoline pipe.

The Harrisburg Motor Club entertained the tourists during the evening with a smoker and buffet supper and presented to each visitor a beautiful delft placque, showing the new state capitol, which was greatly appreciated by the tourists.

Last Day of Tour

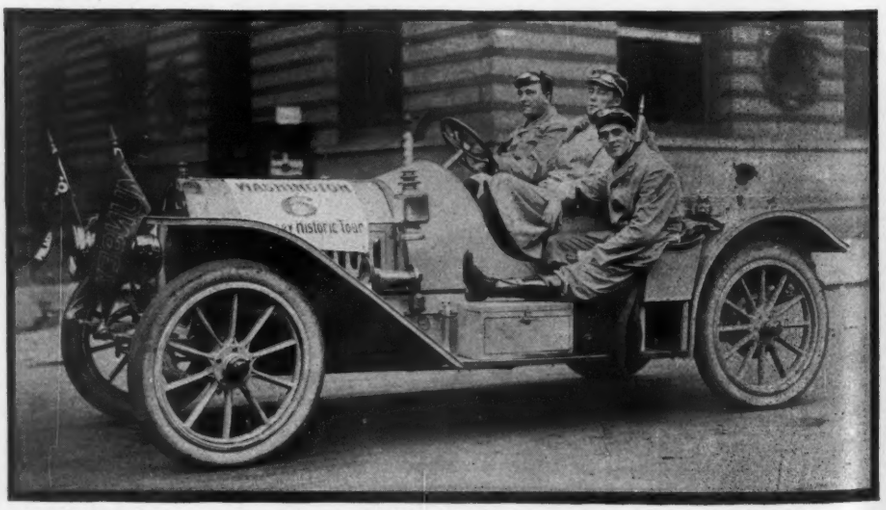
Washington, D. C., Aug. 27—The last day of the long grind was in some ways the hardest of the tour. The Pennsylvania roads to Gettysburg were rough in spots and the long drive over Confederate avenue, where the Army of Northern Virginia was stationed during the great battle of the civil war, came as a welcome relief after the terrific jolting the cars received between the starting point at Harrisburg and the battlefield. Pennsylvania has more than an abundance of road-making material at hand and the condition of the roads is inexplicable save on the hypothesis of neglect.

After crossing into Maryland, a very different story is to be told. Going into Fredrick for miles the roads are conducted as toll-roads, where they are not criminally neglected, they are so filled with big water breaks that riding with any comfort at a greater speed than 10 miles an hour is preposterous. It takes a lot of nerve to charge real money for the privilege of riding over such disgraceful highways, but the word was passed around that running a toll-gate in Maryland was practically a capital offense and the keepers of the gates added to the impression. Under the new motor-vehicle law of the state, heavy license is demanded for the right to operate motor cars, but the unanimous opinion of the tourists was that whatever charge was made, the money was collected under the rankest sort of false pretense on the part of the toll-gate keepers of the state of Maryland.

A short stretch of the route was laid out over the course taken by General Braddock and his ill-fated expedition into western Pennsylvania, long before the revolution. Historically the remainder of the course was not especially interesting, so the tourists discovered.

At Baltimore the travelers were received with much enthusiasm and the tour halted for a short time before the Baltimore News building, where the cars were inspected by big crowds. When the course was taken up again on the last leg of the tour the way led over some of the best road encountered during the trip. Of the 33 miles, only 7 were not up to standard, and the remainder were excellent.

The cars checked in at the Soldiers' Home, in the outskirts of the city, all the contesting cars arriving within the specified limit. The Brush runabout No. 14,



ONE OF THE TWO WASHINGTONS IN THE MUNSEY

with a clean road score, was the last to slip into control and it had several minutes' leeway. None of the surviving thirteen clean-score cars received penalties on account of the last day's run.

BUICK FAST ON HILL

Washington, D. C., Aug. 30—Special telegram—The first hill-climb ever held in Washington took place today on Naylor's hill under the auspices of the Automobile Club of Washington and was a big success. The hill, an incline of 10 degrees in .7 mile, was in splendid condition and while the majority of the drivers were amateurs, the time made was good.

A Buick 16, driven by T. C. Johnston, carried off the premier honors of the day by winning the free-for-all event, negotiating the distance in :49⅕, the fastest time made during the day. His nearest competitors were two Mathesons, one driven by Henry Sanjen, which covered the course in :53, while the other, driven by W. B. McBurney, made it in :56⅕. McBurney had to shut off power a few yards from the finish line because a car was stalled in the middle of the course. He narrowly averted a collision with the machine and this was the nearest approach to an accident during the day. Weather conditions were perfect and a large crowd was on hand to see the sport. Members of the club are talking of repeating the climb at an early day. Summary:

$800 AND UNDER

Car	Driver	Time
Krit	Cadick	1:31.05
Hupmobile	Hamilton	1:39
Krit	Crittenden	1:40⅘
Maxwell	Robertson	1:52⅘
Hupmobile	Brown	2:00

$801 TO $1,200

Warren-Detroit	Tom Berger	1:03⅘
Ford	Miller	1:13⅘
Oakland	Bauer	1:20
Ford	Drake	3:00

$1,201 TO $1,600

Buick	Angle	1:09⅗
Warren-Detroit	Wells	1:11
Parry	Barber	1:11
Petrel	Llano	1:17⅕
Warren-Detroit	Bowles	1:21
Regal	LaRoche	1:25

$2,001 TO $3,000

Matheson	McBurney	1:03⅗
Columbia	Klock	1:26

$1,601 TO $2,000

Buick	Kronkite	1:02⅕
Oakland	Bauer	1:02⅗
Buick	Hamner	1:07
Apperson	Orme	1:13⅗
Buick	Halstead	1:18
Apperson	Fister	1:19

$3,001 TO $4,000

Matheson	McBurney	:58
Matheson	Hall	1:07⅗
Palmer-Singer	Lescault	1:02

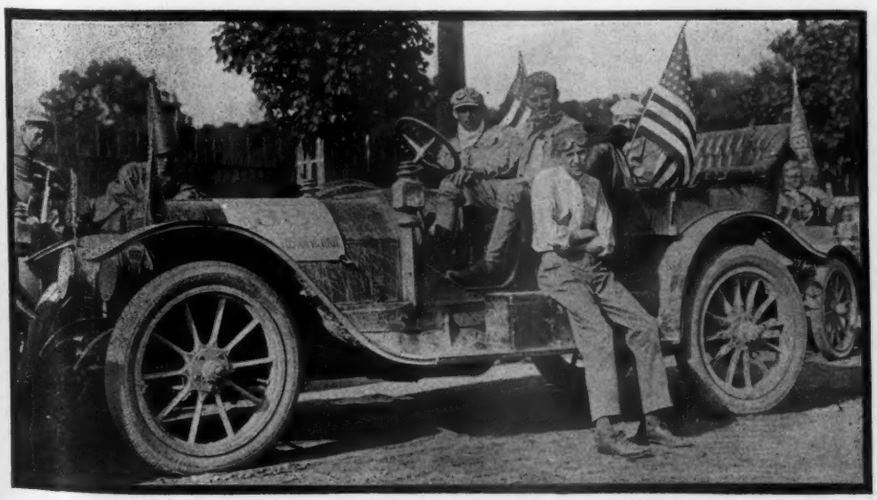
FREE-FOR-ALL

Buick 16, model B	Johnston	:49⅕
Matheson	Sanjen	:53
Matheson	McBurney	:56⅕
Palmer-Singer	Lescault	1:02
Warren-Detroit	Berger	1:05

BRUSH ON PRETTY STRETCH GOING INTO SARATOGA

DETROIT HOLDS A SOCIABILITY

Detroit, Mich., Aug. 29—An innovation in local motoring circles was the sociability run conducted under the auspices of the Detroit Free Press yesterday. It covered a 108-mile course through Wayne and adjoining counties and was just what the name implies, no attempt being made to establish any records of any kind. For the fourteen entrants the run was in the nature of a pleasant Sunday outing. There were no rules, no penalties and no conditions except that the driver making the circuit in the time nearest the schedule fixed by the Free Press, which was kept secret until after the contest, would receive the silver cup offered by Albert R. Smith. Will B. Wreford, local agent for the Columbia, was an easy winer. He was the first to get away and the last in, and his time was 7 hours 24 minutes, just 9 minutes 57 seconds over the Free Press schedule, which was 7 hours, 14 minutes 3 seconds. Nearly every one of the contestants framed up a schedule of his own before starting and adhered to it closely. Wreford came in 6 minutes earlier than he had planned. Police Sergt. Alvin Hicks, of the mayor's office, acted as starter, sending the cars away from in front of the Free Press office 1 minute apart. Robert K. Davis, of the Maxwell-Briscoe-McLeod Co., was referee and Charles A. Coppock acted as judge. Hugh Wood, in a Chalmers 40, made the distance in the shortest time, 4:51:30. The route took in the towns of Wayne, Plymouth, Pontiac, Utica and Mt. Clemens, and good roads were encountered most of the way by the contestants.



BIG MATHESON AT THE END OF THE MUNSEY TOUR

ROOSEVELT WILL BE PRESENT

Syracuse, N. Y., Aug. 29—Colonel Theodore Roosevelt will be a visitor to the New York state fair on motor car day, September 17, and he, with Lieutenant-Governor Horace White, of this city, have been named as honorary referees of the contests. A. R. Pardington will act as referee and Fred J. Wagner will be starter and clerk of the course. De Palma has entered the 1, 5, 10 and 25-mile races, the same events in which his rival, George Robertson, is entered. The Buick racing team is promised. Caleb Bragg, with his Fiat, is expected, also David Bruce-Brown with his Benz.

IDEAL COMPANY REORGANIZES

Chicago, Aug. 30—The Ideal Electric Co., of Chicago, has been reorganized and the capital stock increased to $50,000. The company will open an office and salesroom at 1328 Michigan avenue. The new officers are: Bruce Borland, president; Edwin W. Ryerson, vice-president; Uri B. Grannis, treasurer; Cyrus H. Adams, Jr., secretary, and C. J. Holdredge, general manager.

Now It's the Vanderbilt Cup Race

NEW YORK, Aug. 29—On Monday the work of preparing the Long Island motor parkway course for the Vanderbilt and grand prix will begin in earnest under the supervision of Andrew Brothers, who have prepared the circuits for previous Vanderbilt cup races. Every detail in road construction that will insure safety to contestants and to the public will be carefully carried out and the course will be massaged until it is in perfect form. The turns of the circuit will not be banked this year as formerly has been done. Instead, several of the turns, notably the one at Westbury, will be broadened and made flat, so that a wider radius to the turn will be possible. However, the Massapequa turn, which has an acute angle, will require some banking and it will be widened also. Oil for the course already has been ordered and the surface will be sprinkled at least 10 days before the first practice morning for the Vanderbilt cup race, which is September 20. Immediately after the Vanderbilt race gangs of men will be put to work oiling the roads for the grand prize race.

Practice for the grand prize race will begin on Tuesday, October 4. Drivers in both contests will be permitted to practice daily, except Sundays, between the hours of 5 and 8 o'clock in the morning. The cars formally entered in both races will carry during practice spins an official radiator plate, furnished by the Motor Cups Holding Co., and cars not bearing one of these emblems will be excluded from the course during the practice periods.

Present indications are that no fewer than thirty cars will compete in the Vanderbilt cup race. The entries to date for the Vanderbilt with the drivers and entrants are as follows:

Car, driver and entrant:
Simplex, Ralph E. Beardsley, Simplex Auto Co.
National, Al Livingstone, National Motor Vehicle Co.
Alco, Harry F. Grant, American Locomotive Co.
Benz, David Bruce-Brown, Benz Import Co.
National, Johnny Aitken, National Motor Vehicle Co.
Simplex, Leland A. Mitchell, Henry B. Harris.
Pope-Hartford, Bert Dingley, B. C. Finke.
Pope-Hartford, Jack Fleming, H. Emil Holt.
Benz, Edward Hearne, Benz Import Co.
Benz, George Robertson, Benz Import Co.
Lozier, Ralph Mulford, Lozier Motor Car Co.

MASSAPEQUA SWEEPSTAKES.

Cole 30, Bill Endicott, Cole Motor Co.

For the grand prize race there are entered to date fourteen cars of American and foreign manufacture, and these will be driven by racing pilots of international and world wide fame. The cars, drivers and entrants are as follows:

Car, driver and entrant:
Alco, Harry F. Grant, American Locomotive Co.
Benz, Barney Oldfield,, Benz & Co.
Benz, Victor Hemery, Benz & Co.
Benz, George Robertson, Benz & Co.
Fiat, Louis Wagner, Fiat Auto Co.
Fiat, Ralph De Palma, Fiat Auto Co.
Fiat, Felice Nazarro, Fiat Auto Co.
Marmon, driver not named, Nordyke-Marmon Co.
Marmon, driver not named, Nordyke-Marmon Co.
Marmon, driver not named, Nordyke-Marmon Co.
Marquette-Buick, Louis Chevrolet, Marquette Motor Co.
Marquette-Buick, Robert Burman, Marquette Motor Co.
Marquette-Buick, Arthur Chevrolet, Marquette Motor Co.
Roebling-Planche, W. A. Roebling, 2nd, W. A. Roebling, 2nd.

Realizing that the crowd this year will be greater than ever before, the Motor Cups Holding Co. is making arrangements with transportation companies to properly care for the traveling racegoers. Thus far arrangements are under way with several companies whose ferries will leave the Connecticut and New York shores on days preceding both races, September 30 and October 14, arriving on Long Island in due time to allow the passengers sufficient time to reach points of vantage along the race course. The ferries are as follows: Rye, N. Y., to Seacliff, N. Y.; Stamford, Conn., to Cold Spring, L. I.; Bridgeport, Conn., to Port Jefferson, L. I.; New London, Conn., to Greenport, L. I. All of the companies are making special preparations for the influx of racegoers and are in a position to put additional boats into service if necessary.

LOWELL'S NEXT YEARS' PLANS

Lowell, Mass., Aug. 29—President John Heinze, of the Lowell Automobile Club, is much chagrined at the loss of the road races here this year, but he already has started plans to get things in shape to have an international race here next year on Labor day, if possible. He believes that the dates selected for this year's proposed races handicapped them, as the merchants did not want to lose the big Saturday trade which would result from having the star event on the last day of the week. He thinks one big race on the holiday will be the best plan and he intends to work along those lines.

STAR TROPHIES TOUR ON

Kansas City, Mo., Aug. 31—Special telegram—At 4 o'clock yesterday morning the Lexington pilot car of the Star trophies tour left the office of the Star, headed for Newton, Kan., the first day's run of 213.5 miles. It was followed at 5:45 by the Pennsylvania pacemaker, the Gleason light commercial truck, and the Regal press car. At 6 Franklin No. 1 was checked out. There are forty cars in the tour, thirty-five contesting. The run extends to Raton, N. M., and Colorado Springs, Colo., a distance of 1,585 miles, to be covered in 9½ days. These cars were checked by Louis J. Long, starter, and Carl Muehlebach, sealer, who were the passengers in the Columbia official car that was the last to leave the office of the Star. In the pilot car were W. G. Whitcomb, pilot; Frank E. Lott, chief observer, and John McGauran, cashier of the Hotel Kupper, who went as the substitute of W. J. Kupper to make the nightly hotel assignments. Heine Holzethauer drove the official car and A. O. Brooke, the pilot. The pacemaker carried H. N. Strait, referee; W. P. M. Stevens, representative of the American Automobile Association, and R. O. Kendall, driver. The light rain of yesterday only seemed to lay the dust on the roads and there were only light penalties last night, with the exception of Inter-State No. 35, which burned a bushing and did not reach control last night.

ANOTHER MINNEAPOLIS RUN

Minneapolis, Minn., Aug. 29—With the return Thursday of Driver Jay H. Zollars and his helpers in the Everitt, the official pathfinder for the Tribune reliability contest, details for the route to be followed between Minneapolis and Aberdeen, S. D., during the run which starts from this city September 30 and ends here October 4, were completed. Only the compiling of the road notes remains for the scouts in charge. That the tour will pass over a section of the northwest that will prove to be an eye-opener to many of the contestants is certain. Some of the finest roads will be passed over and some unusual scenery, especially in the famous Dakota hills on the second day, will offer sights that are extraordinary. While it is probable that the route from this city to Litchfield, Minn., on the first day out will be revised to some extent so as to shorten up the run by 20 miles, as well as to avoid the dangerous curves in the former route, the itinerary will probably be as originally mapped out.

COAST STUDYING ROADS

Spokane, Wash., Aug. 26—Needs of every community and district in Washington and the road laws of other states will be studied by the legislative committee of the State Good Roads Association, under the direction of Frederick W. Dewart, of Spokane, just appointed chairman of the organization, with a view to bringing a satisfactory state road measure before the next legislature. J. A. Perry, secretary of the Spokane County Good Roads Association, will serve in a similar capacity to the state committee, which has just established headquarters in the Hutton building. J. C. Lawrence, president of the state association, calls attention to the fact that under the state aid law $51.92 out of every $100 paid into the state aid fund is paid on property within the corporate limits of cities and towns, and yet not a single dollar of the fund can be expended within cities or towns. It is all expended in the country. Among other matters outlined by Mr. Lawrence for the consideration of the members of the committee are the following: Should the principle of state aid be retained? What changes, if any, in the administration of this law, if retained? What provision should be made for maintenance of roads—the roads now existing

as well as roads hereafter constructed? What steps should be taken toward securing competent road-builders—men capable of taking charge of road-building and road maintenance and who will give 100 cents efficiency for every dollar expended in both material and labor?

FIREMEN DISCUSS MOTORS

Syracuse, N. Y., Aug. 29—The convention of the International Association of Fire Engineers was held here last week. A report was made by the committee on exhibits, of which Chief Fillmore Tyson was chairman, upon motor car fire engines. A number of tests had been made of different makes of this apparatus and the report made was to the effect that the engine, though a comer, is still considerably below the standard which must be maintained. Chief McFall, of Roanoke, Va., says that as yet an engine has not been built strong enough to propel the apparatus and also pump the water at the rate required. It lacks lifting power, he claims, though he admitted that it could outstrip horse-drawn apparatus and surpassed a steamer so far as endurance is concerned.

EFFICIENCY MAIL TEST

Philadelphia, Pa., Aug. 28—The Quaker City Motor Club has issued final instructions for the United States efficiency mail test that will take place all of this week, the text of which is as follows: All entrants to report with their own cars ready for active service according to postoffice schedule. Entrants unable to conform to this schedule must give 24 hours' notice with valid reasons for not keeping same, so that an emergency car can be used. Time will be taken from postoffice time clocks, starting and finishing stations. Details of the performance of all cars entered will be kept by postoffice time judge, who will be a passenger on each car during trials. Being on time of great importance to the postoffice authorities, promptness being one of the main points of the trial. The schedule to be as follows:

Date	Station	Car
Aug. 29—	Torresdale	Oakland
	Bustleton	Hudson
Aug. 30—	Torresdale	Bergdoll
	Bustleton	Maxwell
Aug. 31—	Torresdale	Overland
	Bustleton	Klinekar
Sept. 1—	Torresdale	Klinekar
	Bustleton	Pullman
Sept. 2—	Torresdale	Reo
	Bustleton	Parry
Sept. 3—	Torresdale	Mitchell
	Bustleton	Haynes

Emergency Cars—Marion and Hudson

MILWAUKEE REMEMBERS ORPHANS

Milwaukee, Wis., Aug. 29—The seventh annual outing of the Milwaukee Automobile Club to the orphans of Milwaukee was a huge success this year. Not a hitch nor an accident marred the ride of the children to and from Washington park, where the festivities were held. There were 101 orphans from the St. Rose's asylum, ninety from the Milwaukee Protestant Orphan asylum and many from the St. Aemilianus asylum, more than 200 in all.

Gossip of Motor Trade in Detroit

DETROIT, MICH., Aug. 29—From an authority close to Manager Durant, the Detroit Times, in a recent article, claims to have learned that negotiations are in progress with the big New York banking house of Kuhn, Loeb & Co. to have that company underwrite a large amount of General Motors preferred. The article continues:

"According to the report, the big bankers are to furnish $35,000,000 to the General Motors Co. This sum will be used first to pay off all the obligations of the company and its subsidiaries and provide a working capital for the company sufficient to make it independent of the banks. In addition it is reported that out of this fund two large motor car plants not now in the combine will be bought, which will give the General Motors control of a much larger portion of the motor car output than it now has. All the General Motors plants are said to be under examination by agents of Kuhn, Loeb & Co. and a strict inventory is being taken. It is not likely that the work will be completed for at least a month yet and the financial plans will not be carried through until it has been finished. If Kuhn, Loeb & Co. are satisfied with the results of their examination, it is believed that they will go ahead with the plan outlined above."

The story has attracted some little notice locally, for the General Motors Co. has been the center of a good deal of interest lately.

After several weeks' delay, preparations are being made to start work on the excavation for the United States Motor Co.'s building at Woodward and Charlotte avenues. Contracts for the excavating, masonry and carpenter work were awarded last week and the letting of other contracts will follow shortly. Robert K. Davis, manager of the Maxwell-Briscoe-McLeod Co., sales agents for the Maxwell and Columbia cars, announces that on September 1 the firm name will be changed to the United Motor Detroit Co. The company will have offices and sales rooms in the new building as soon as it is completed, it is announced.

About October 1 the Warren Motor Co. will move into its new factory building on Holden avenue, near Lincoln avenue, the first of three to be erected. One portion of it is now practically completed and will be formally dedicated Thursday night by a dance to be tendered the employes by the company. The new plant is 600 feet long, two stories high and of brick. It will triple the capacity of the present plant on Isabella street, near Michigan avenue, and the number of employes will be increased from 125 to about 250 as soon as the company moves. At the same time work will commence on the second building.

"We are now turning out five cars a day on an average," said General Manager J. G. Bayerline. "We have turned out twelve cars a day, but we are confining our output now to cars for which we have orders in advance, so we have none on our hands. As a result of this conservative policy we have not found it necessary to resort to price-cutting to get rid of our product. Not one Warren-Detroit has been sold at less than the regular figure. We have nothing to fear, for we are playing absolutely safe. The prospects for next year are of the brightest."

It is pretty generally understood that Henry Ford, of the Ford Motor Co., will be president of a new banking house to be started in Dearborn as a successor to the private bank of D. P. Lapham. The new corporation will have a capital stock of $25,000, it is said. Associated with him in the venture will be James Couzens, of the Ford Motor Co.; John H. Johnson, president of the Peninsular Savings bank, and James Whitehead, a director in the same institution. As yet no formal announcement has been made of the foundation of the new concern.

The flourishing little city of Flint announces its census figures, showing an increase of nearly 200 per cent in her population in the last 10 years. This is the best percentage of increase yet shown by any city, and Flint is justly proud. The motor industry is entitled to practically al the credit, and Flint is far from slow in giving it.

The week has brought the customary announcements of changes in administrative positions. Fred C. Neidermiller, formerly receiving teller in the Peoples' State bank, has been elected secretary of the Autoparts Mfg. Co. The business has increased to such an extent that the company is now having plans prepared for a building that will double its output for the coming season.

F. R. French has joined the sales force of the Chalmers Motor Co. and will act as official guide in showing visitors through the factory. Already the rush has begun for the Chalmers sales department. Orders are coming in from all sides for immediate delivery and the plant is running full capacity to keep up with the demand. The company has recently installed a laboratory for the testing of all materials that go into the construction of Chalmers cars.

The Cadillac Motor Car Co. has given out a statement to the effect that it had on hand August 24, for immediate delivery, specifications for 1,500 cars of the 1911 model. These are the first results of the dealers' fall campaign and seems to augur well for the season. Sales Manager E. R. Benson claims to have on hand no fewer than 7,000 applications from men who want to become Cadillac agents and dealers for next season.

World-Herald Trophy Won by Buick

ODERDINK IN BUICK THAT WON WORLD-HERALD ENDURANCE RUN

OMAHA, Neb., Aug 29—Finishing a strenuous tour of 517 miles through Iowa and Nebraska in 3 days, the cars in the World-Herald endurance run of the Omaha Motor Club checked into Omaha last Friday afternoon after having traversed a course which taxed the capabilities of the cars to the utmost.

A model 10 Buick car driven by H. E. Oderkirk won the first prize, the World-Herald trophy with a technical penalty of 5 points and a road penalty of 10, a total of 15 points.

A Maxwell car, driven by L. E. Doty, captured the second prize, a trophy offered by the Omaha Motor Club, with a technical penalty of 20, road score perfect, total 20.

The winners of the three class prizes were as follows:

Class 1—Hupmobile, driven by W. L. Huffman, technical penalty 61, road 22, total 83.
Class 2—Chalmers, driven by H. E. Fredrickson, technical penalty 22, road perfect, total 22.
Class 3—Velie, driven by E. Silver, technical penalty 44, road 2, total 46.

Cars ranging in price from $600 to $3,000 were entered and made an average speed from 16 to 20 miles an hour, but in some cases the roads encountered were so bad that it was impossible to make more than 8 miles an hour. There were twenty-five competing cars and five official machines. All but two of the contestants finished the tour; the two which dropped out were disabled the first day. The Cole 30 after striking a series of bad ruts broke a steering arm. A Chalmers, one of the five of this make of cars entered, broke a rear axle in the same ruts. It was driven by E. H. Sprague.

The run was a big success in every way. All of the cars made a fine showing. First they encountered steep hills and many of them. Then they ran into a stretch of country that had been visited by rain. A few miles of the road along the river bottom were of such that even a wheelbarrow would have been discouraged. Then came the choppy Nebraska roads with good stretches in between. It ended up with occasional strips of sandy roads, bumps and bad culverts. But the cars took everything.

Even the big Frayer-Miller truck entered by Murphy & Son, one of the kind that totes pianos around, laid down a 14-mile schedule and made good on it, finishing in good shape.

The cars pulled out of Omaha at 7 o'clock Wednesday morning, the National 40, official pilot and confetti car, having left at 4 o'clock in the morning. The noon control at Shenandoah was made

Technical and Road Scores

DIVISION 1, CARS UNDER $800

No. 6, Maxwell—Nut loose on gear-shifting lever, 2 points; nut loose on steering gear tie rod, 1 point; loose steering knuckle bolt, 15 points; bent driveshaft, 75 points. Technical penalty 93; road score 256; total 349.

No. 15, Hupmobile—Leaky gasoline tank, 1 point; brakes, 25 points; loose muffler, 2 points; two loose body bolts, 2 points; oil cup lost on steering gear, 2 points; 11½ feet over line of foot brake test, 12 points; 6½ inches over line on emergency brake test, 7 points. Technical penalty 61; road 22; total 83.

DIVISION 2, CARS RANGING IN PRICE FROM $801 TO $1,600

No. 1, Chalmers—Leaky oil connections, 2 points; three loose terminals, 3 points; loose steering connections, 15 points. Technical 22; road perfect; total 22.

No. 2, Buick—Inoperative fan, 2 points; three loose body bolts, 3 points. Technical penalty 5; road penalties 10; total 15.

No. 3, Buick—Two leaky oil connections, 2 points; leaky gasoline line, 1 point; loose steering connections, 15 points; two loose nuts on strut rods, 2 points; water pump packing nut loose, 2 points; 1 foot 10 inches over brake line, foot brake, 2 points. Technical 32; road perfect; total 32.

No. 7, Maxwell—Fan belt off, 1 point; two loose terminals, 1 point; loose magneto, 4 points; loose body bolts and chassis, 6 points; 7 feet over brake line, on emergency brake, 7 points. Technical score 20; road score perfect; total 20.

No. 17, Ford—Loose muffler, 2 points; broken fender, 10 points; leaky water connection, 1 point; loose terminal, 1 point; loose steering connections, 15 points; loose body bolts, 3 points; lost body bolt, 2 points; loose bonnet fastener, 1 point; petcock gone on radiator, 1 point; knock in engine, 10 points; two rear wheels loose, 5 points each, 10 points; 25 feet 6 inches over brake line on emergency brake, 26 points. Technical score 82; road score 49; total 131.

No. 18, Stoddard-Dayton—Leaky oil connection, 1 point; loose brake, 25 points; two leaky water connections, 2 points; leaky radiator, 20 points; four loose terminals, 4 points; five dead dry cells, 2 points each, 10 points; bent steering gear tie rod, 25 points; loose steering connection, 15 points; oil plug out on steering gear, 1 point; magneto coupling loose, 2 points; two rear wheels loose, 5 points each, 10 points; lock on rear seat lost, 1 point; 1 foot 10 inches over brake line on foot brake, 2 points; 29 feet over brake line on emergency brake, 29 points; right rear axle bent, 40 points. Technical score 124; road score 43; total 167.

No. 20, Ford—Loose muffler bolt, 2 points; loose fender, 2 points; leaky water connection, 1 point; leaky radiator, 20 points; two loose terminals, 2 points; lost body bolts, 2 points; loose bonnet fastener, 1 point; two bolts lost on mud apron, 2 points; two rear wheels loose, 10 points; two radiator straps loose, 20 points; rocker shaft loose on clutch-setting lever, 2 points; loose number pad, 1 point; 38 feet over line on emergency brake, 38 points. Technical score 103; road score 10; total 113.

No. 21, Chalmers—Leaky oil connection, 1 point; seven loose terminals, 7 points; loose steering connections, 15 points; spring hanger nut loose, 1 point; pump packing nut loose, 2 points; loose timer casing, 5 points; headlight tie rod loose, 2 points; clutch slipping on clutch test, 5 points. Technical score 38; road score 3; total 51.

No. 22, Chalmers—Four loose terminals, 4 points; loose steering connections, 15 points; headlight tie rod loose, 2 points; loose exhaust pipe, 5 points; timer case lost, 5 points; packing nut on pump leaking, 2 points; foot

TWO MILES OF WELCOME SHADE NEAR FREMONT, NEB.

ahead of schedule with no mishaps. At Hamburg, Ia., the tourists met with a reception not soon to be forgotten. In the main street the citizens had erected a refreshment stand and supplied the thirsty ones with lemonade and cigars. Nebraska City was reached without incident, but the road to Lincoln, the night control, was rough and choppy and it was here that the two cars mentioned came to grief.

The roads from Hastings to Lincoln on the second day, were good, and from Hastings to Kearney the going was easy. The night was spent at Kearney.

From Kearney to Omaha the third day was the longest run of the trip, 193 miles. Sandy roads from Kearney to Columbus were encountered, but from Columbus to Fremont fine progress was made and the run into Omaha was made in remarkably quick time, E. Mockett, of Lincoln, with a Waite car, being the first to arrive.

The chief trophy of the run was the World-Herald cup, a handsome sterling silver prize. A second cup was offered by the Omaha Motor Club and three other prizes were awarded to the best car in each of the three divisions.

The attitude of the farmers along the way, the hearty welcome, the interest displayed in the cars, all went to show how much more interested Nebraska people are in motor cars than they were when the World-Herald contest was run a year ago, when the same ground was covered.

The motor car is not near so much of a novelty to the farmer as formerly. All of the towns in the state were found to be alive to the importance of the motor, and in nearly every one there was at least one garage. The entries were:

World-Herald press car, Maytag-Mason, Freeland Brothers-Ashley Co.
National 40, pilot and confetti car; Standard Auto Co.
Pacemaker, Velie; Velie Auto Co.
Kissel, official press car; Kissel Auto Co.
Velie press car, Velie; Velie Auto Co.
No. 1—Chalmers, H. E. Fredrickson Co.
No. 2—Buick, Nebraska Buick Auto Co.
No. 3—Buick, Nebraska Buick Auto Co.
No. 4—Buick, Nebraska Buick Auto Co.
No. 5—Buick, Buick Motor Works, Glenwood, Ia.
No. 6—Maxwell, Maxwell-Briscoe Omaha Co.
No. 7—Columbia, Maxwell-Briscoe Omaha Co.
No. 9—Kissel, C. B. Bogue, Jr.
No. 10—Velie, John Deere Plow Co.
No. 11—Midland, Freeland Brothers-Ashley Co.
No. 12—White gasoline, E. E. Mockett, Lincoln.
No. 13—Franklin, Guy L. Smith.
No. 14—Inter-State, W. L. Huffman.
No. 16—Cole, Mid-West Auto Co.
No. 17—Ford, Monnich & Monnich, Hooper.
No. 18—Courier, J. J. Deright Auto Co.
No. 19—Frayer-Miller truck, Andrew Murphy & Son.
No. 20—Ford, Max Gottburg, Columbus, Neb.
No. 21—Chalmers, F. T. Walker.
No. 22—Chalmers, Dr. J. C. Soukup.
No. 23—Cadillac, Cadillac Co. of Omaha.
No. 24—Chalmers, E. H. Sprague.
No. 25—Chalmers, Miss Bessie Amos.

Nebraskans Hold Reliability Run

REFRESHMENTS SERVED BY RESIDENTS OF HAMBURG, IA.

Technical and Road Scores

rest loose on one side, 1 point; 14 feet over brake line, on emergency brake, 14 points; clutch slipping on clutch test, 5 points. Technical penalty 53; road score perfect; total 53.

No. 25, Chalmers—Three loose terminals, 3 points; loose steering connections, 15 points; loose exhaust pipe, 5 points; two top rests loose, 2 points; headlight tie rod loose, 2 points; right front wheel loose, 5 points. Technical 33; road 18; total 51.

DIVISION 3, CARS COSTING MORE THAN $1,601

No. 4, Buick—Leaky oil connections, 2 points; leaky radiator, 20 points; loose radiator, 4 points; loose body bolt, 1 point; front headlight gone, 10 points; lamp bracket bent, headlight broke, 15 points; bottom gone on side oil lamp, 5 points; tie rod loose on hood, 10 points; two push rod guides loose, 10 points; knock in motor, 10 points; brake test, 3 feet 3 inches over line of foot brake, 4 points. Driving car at intermediate controls, before checking in, at Red Oak and Grand Island, 50 points. Technical 141; road 18; total 159.

No. 5, Buick—Leaky gasoline line, 1 point; leaky gasoline tank, 1 point; leaky gasoline petcock, 1 point; foot brake inoperative, 100 points; loose fender, 2 points; leaky water connection, 1 point; broken valve locker, 10 points; loose steering connections, 15 points; loose body bolt, 1 point; fan pulley loose, 2 points; clutch slipping, 5 points. Technical 136; road 6; total 142.

No. 8, Columbia—Two broken wheel spokes, 10 points each, 20 points; loose body bolts, 2 points; horn loose near horn bulb, 2 points; left rear tire off, rim bent, 50 points; right front wheel loose, 5 points; two rear wheels loose, and lose bearings, 10 points; loose exhaust manifold, 10 points; 56 feet 4 inches over brake line on emergency brake, 57 points. Technical 156; road perfect; total 156.

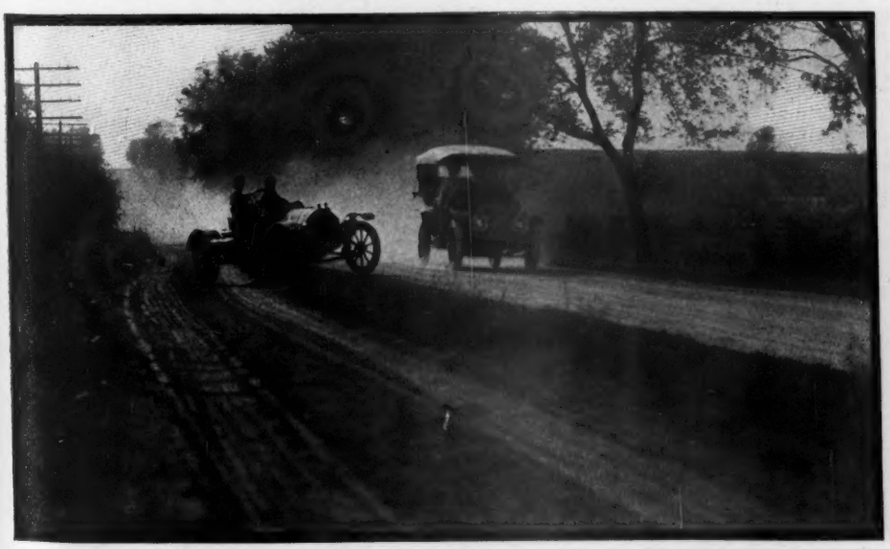
No. 9, Kisselkar—Loose oiler, 3 points; leaky water connection, 1 point; loose radiator, 4 points; loose terminal, 1 point; loose steering connections, 15 points; seven loose body and chassis bolts, 7 points; loose bonnet fastener, 1 point; broken gas tank bracket, 2 points; loose lamp, 2 points; dust cap off of universal joint, 1 point; force feed gasoline pump loose, 5 points; 50 feet over brake line of foot brake, 50 points; 51 feet 6 inches over brake line on emergency brake, 51 points. Technical 143; road 6; total 149.

No. 10, Velie—Leaky oil connection, 1 point; leaky gasoline tank, 1 point; loose terminals, 2 points; loose body bolt, 1 point; right rear wheel loose on shaft, 5 points; oil cup gone on universal joint, 2 points; 17 feet 6 inches over brake line on emergency brake, 18 points. Technical 44; road 2; total 46.

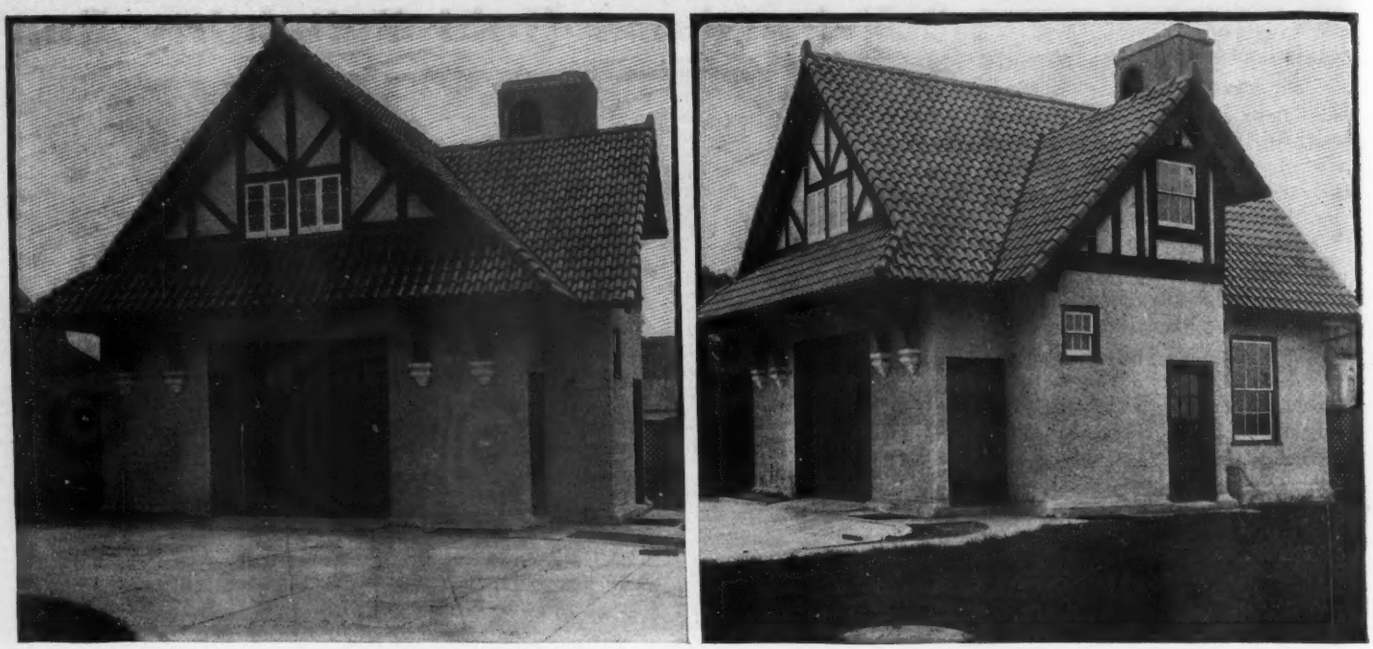
No. 11, Midland—Two leaky water connections, 2 points; loose radiator, 4 points; inoperative fan, 2 points; loose steering connections, 15 points; packing nut leaks on pump, 2 points; motor bolt loose on frame, 5 points; leak in waterjacket, 50 points. Technical 97; road 6; total 103.

No. 12, White—Leaky oil connection, 1 point; broken mud apron, 5 points; bent steering tie rod, 25 points; two loose steering knuckles, 30 points; loose body rivet, 1 point; seven oil plugs out, 1 point; three nuts loose on transmission, 3 points; foot brake test, 4 feet over line, 4 points; emergency brake, 105 feet 6 inches over line, 106 points. Technical 179; road 33; total 212.

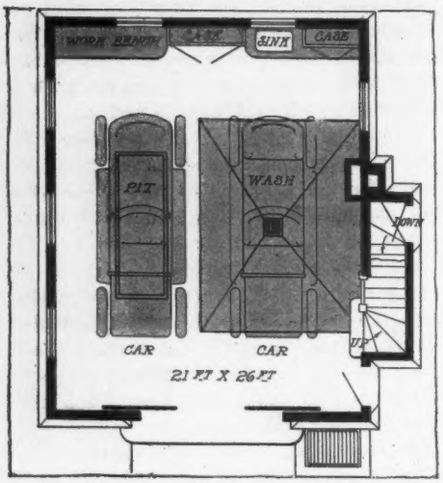
No. 13, Franklin—Loose fender, 2 points; two loose body bolts, 2 points; impaired universal joints, 40 points; bent spring leaf, 3 points; engine frame bolt loose, 1 point; knock in engine, 10 points; 9 feet 5 inches over line on foot brake, 10 points; 4 feet 6 inches over line on emergency brake, 5 points. Technical 71; road perfect; total 71.



STRETCH OF MACADAM ROAD FIFTEEN MILES WEST OF OMAHA



TWO VIEWS OF THE BELOIT, WIS., GARAGE FOR HOUSING TWO MOTOR CARS



FLOOR PLAN BELOIT GARAGE

Architect's Idea of Garages

Editor's Note—Specially written for Motor Age by Victor Andre Matteson, architect, La Salle, Ill., the illustrations and floor plans being from garage of the writer's design.

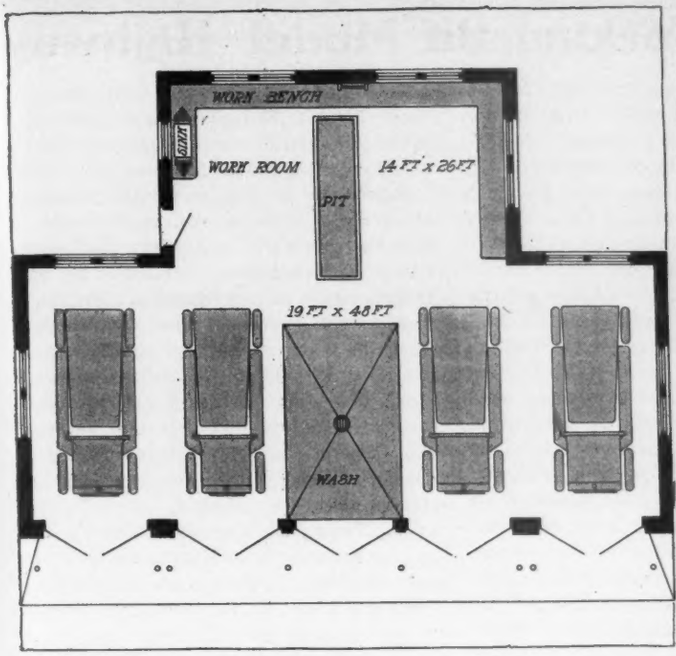
THE average owner of a motor car, living in the suburbs, in the country, or in smaller cities or towns, in these days of motoring begins to think of a suitable place in which to house his car as soon as the feeling of buying one strikes him. The thoughtful buyer thinks of the garage before the car is purchased, and has a suitable shelter for delivery day. A suitable garage is imperative, and the makeshifts often seen are as incongruous as a diamond stud with a celluloid collar. When the $5,000 car is put in a $200 shed the wonder is whether the buyer's money was all expended when the car was paid for. Unfortunately this theory is frequently true.

When the problem of more than one car is considered, a garage, in the real sense of the word, is a necessity. A motor car frequently means an extra man about the place, whether he is known by the dignified title of chauffeur or simply a barn boy to clean the car. Where several cars are owned it generally means a driver and a garageman, the latter to take care of the cars and do other work. A private garage should contain proper arrangements for accommodating the man or men, which usually necessitates one or more sleeping rooms, a bath or shower, toilet rooms, a workshop, and tool room, in addition to the regular spaces for the cars and wash racks. A repair kit is not so great a necessity for inspecting and repair of cars as it used to be, but still is frequently in demand.

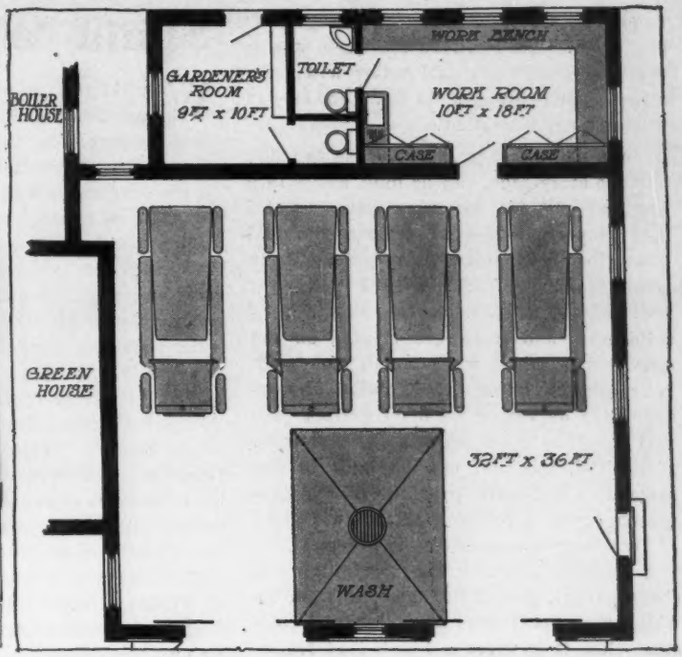
Conditions Should Harmonize

The garage should be invariably designed with due regard not only for the convenience of its arrangement, but with the surroundings. It should harmonize with the house and other adjoining buildings, and deserves just as much consideration from the aesthetic point of view as does the house. The nature of its requirements and use are such that it lends itself to possibilities in design in a much less limited way than does the stable, which it is rapidly superseding. In large estates it is frequently the custom to provide separate quarters for the servants, and in the smaller cities the driver or mechanic frequently lives in his own home in the neighborhood, subject to easy call by telephone. In such cases sleeping quarters within the building are not a necessity,

LA SALLE, ILL., GARAGE INTENDED TO HOUSE FOUR LARGE CARS



FLOOR PLAN OF THE LA SALLE, ILL., GARAGE



FLOOR PLAN OF DEER PARK, ILL., GARAGE

For Use of Suburban Motorists

and this condition, making a one-story building practical, and materially alters the design, as well as cost.

Every garage should be arranged so that there is room at sides and both ends of cars to afford ample working space. Also a space should be left for washing the cars in cold weather in doors. For this reason a heating apparatus with facilities for hot water heating should be provided. The entire floor should be slightly pitched toward the wash rack or drain, and of course should be raised above the level of the outside grade. Steep approaches, however, should obviously be avoided. Gasoline is best kept in a large steel tank buried in the ground outside the building, and piped to a pump located in any convenient place for filling the cars.

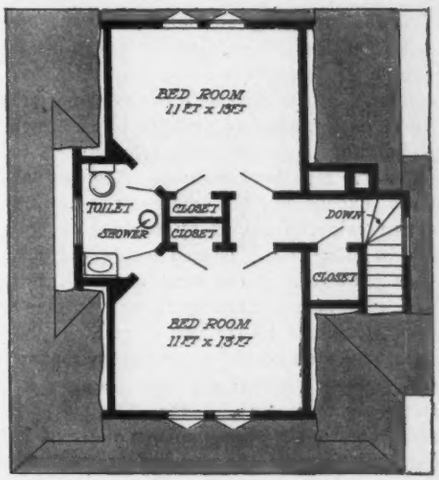
Ventilation is Necessary

Inasmuch as cold gasoline vapor is heavier than air, and settles to the floor, a ventilator at the floors should be provided to remove the dangerous vapor caused by leaks, or spilled gasoline. The warm vapors from the exhaust usually rise sufficiently to be removed by a ventilator near the ceiling, but if only one is provided, the floor ventilator is of the most importance. Such ventilators to work properly in cold weather must be connected to a warm flue adjacent to a hot smoke flue, but of course not connected directly with the smoke flue.

The question of suitable materials in garage construction is to some extent a question of the pocket book. In a building of this character it is extremely desirable that the structure be as fireproof as possible. Concrete floors—reinforced if a cellar is provided—brick walls, and slate or tile roof supported on wooden rafters, with patent plaster interior on metal lath, is about the extent of fireproofing that the average garage requires, and possibly this is sufficient. A very slight additional expense, however, would make a light reinforced concrete ceiling, also roof if flat, and a light steel roof construction to hold tiles on a steep roof, is not very expensive as compared with the whole cost of the building, if of any pretentions. This would make a one-story building entirely fireproof, assuming of course that the partitions were of brick, tile or other fireproof material.

Concrete Best for Flooring

Concrete is the best material for flooring. Oil in time will affect such a floor, but this single objection is not great



BELOIT GARAGE, SECOND FLOOR

THE DEER PARK, ILL., GARAGE FOR FIVE LARGE MOTOR CARS

enough to offset its many advantages. It should be pitched toward the wash rack or drain, so that snow and water will drain away, when brought in on the car in winter or bad weather.

Very small garages, to hold one car, and but one story high, can be built easily in a fireproof manner by using patent metal lath properly supported temporarily, and plastering both sides with cement, to a total thickness of from 2 to 3 inches for walls and partitions. This makes a very solid wall, and it can be treated on the outside in various ways which look well. Like other buildings the finished appearance will depend more upon correct proportions than upon materials and details. If desired, the roof can be built in the same way and water-proofed. For a five-passenger car a building 12 feet wide and 17 feet long is as small as is practical.

A very satisfactory type of building a cheap garage, and at the same time one in which the appearances are subject to consideration, is to erect a 4-inch stud frame as for an ordinary wood dwelling, sheathed on the outside, for the sake of bracing, furr the sheathing, and lath inside and out with metallic lath or wire cloth. The inside can be plastered with a cement plaster, and the outside plastered with cement stucco or rough cast worked to pleasing lines. Such a building is warm and not subject to expensive repairs or painting. A somewhat more expensive, but more fire-resisting construction, is gained by the use of hollow building tile, plastered inside and out, with partitions of the same material, and floor of concrete. The roofs may be made very attractive by the use of colored tile, slate, and some of the many patent roofing materials are also satisfactory. Shingles or metal are only used for the cheapest possible roof constructions. When the roof is flat, or nearly so, the common gravel roof is as satisfactory as any.

Brick in Garage Construction

Brick is after all one of the most satisfactory materials for garage construction, and by facing the common brick walls with one of the many kinds of vitrified shale bricks, a very rugged wall of pleasing color may be obtained. Concrete blocks or artificial stone are frequently advocated, and while concrete itself is an excellent building material, the cost of blocks which can be compared with cut stone in appearance is such that it is frequently cheaper to use the stone made by nature.

Aside from the general question of suitable materials, it is difficult to say much in a brief article on the subject of appearances. This is a question of the skill of the designer, and is answered by means of a knowledge of the complex rules of proportion and color, skill in the handling of details, and the use of the right materials in the right place for proper effect.

The illustrations and plans which accompany this article illustrate three different conditions. The garage located in Beloit, Wis., is a type which perhaps illustrates the most common case, a private garage in a small city, housing two cars, with sleeping accommodations for two men, bath, toilet, etc. This building is heated with hot water from a heater in the basement. In order to secure safety, no direct connection is made from the inside of the building to the cellar, and the ceiling of the latter is of reinforced concrete, making it practically fireproof. The main floor of the garage is of concrete, finished with a cove at the angle with the wall. The walls are provided with a high wainscoting of light colored pressed brick, and above this are of plaster, including the ceiling. The floor space is sufficiently large to easily accommodate the two cars and provide plenty of work space around them, and space for bench, sink, cases, etc. The outside of the building is of Portland cement plaster rough cast, designed in a semi half-timbered style, and provided with a green glazed tile roof. The timber work and all woodwork except the sash is stained dark brown. Electric light is provided, also plenty of convenient plugs for the connection of cords for inspection lights and vulcanizers. A charging board for storage batteries is included in the electric equipment.

A La Salle Illustration

The La Salle garage illustration is a type belonging to a large city residence, in which is no provision for the accommodation of employes, who in this case do not live on the premises. The building was designed to accommodate four large cars regularly, but now contains several more without undue crowding. The work room is entirely separated from the space for cars, and contains sink and workbench, with perhaps more than the usual tools, electric buffers, etc., also a very ample cupboard space for the storage of laprobes and other accessories. The building is practically fireproof, and contains no cellar or second story. Heating by hot water is obtained from a central plant adjoining, which also heats the residence, greenhouse, stables, etc. The interior is finished with brick wainscoting and plaster with natural finish woodwork. The exterior is of vitrified brick, decorated with plaster panels, and tile cornice.

The illustration of a garage belonging to a large country estate at Deer Park, Ill., belongs to a third classification, that of the summer country place. Unlike the preceding case, this building may be seen from all directions, so is designed to look equally well from any side. It is intended to hold five large cars and two smaller ones, and more can be put in at a pinch. No provision is made for employes, who are all accommodated in another building, and no shop is provided as repairs are all made elsewhere. Nothing but provisions for the usual washing, polishing, tire repairs, and minor adjustments are made in this building. While built mostly of brick, the building is not fireproof, but is isolated, and the fire risk in this case is very slight. The interior is of pinkish buff pressed brick, with plaster ceiling, cement floor, and natural finish woodwork. Electric light is provided, but as the building is intended for summer use only no heating arrangements are furnished. The exterior is of vitrified brick and half timber and plaster.

Spain Working On Model Highway

WASHINGTON, D. C., Aug. 27—Consul General Frank D. Hill, of Barcelona, furnishes the following information in the Daily Consular and Trade Reports concerning a highway for motoring tourists in Spain, proposed by a society which aims to attract foreign visitors to the kingdom: "On account of the condition of Spanish roads, the country is little visited by motorists," he says. The Barcelona Society for Attraction of Visitors reports that in many instances it is compelled to advise tourists to give up contemplated trips for lack of roads and often bridges. The Automobile Club of Barcelona states that a caravan of eighty cars belonging to the Perigueaux Club started for Barcelona in June last and could not cross the frontier. In December, 1907, there were 95,000 licensed motor cars in France, 164,000 in England, 60,000 in Germany, 12,000 in Belgium, 8,000 in Switzerland, and 26,000 in Italy—in all, over 500,000 in Europe. This number is greatly increased by American cars brought over for the touring season.

Widespread interest in Spain and Spanish life undoubtedly would bring many of these 500,000 European motor cars into Spain, were it not for the impracticability of Spanish highways. In view of the impossibility of putting, in a limited space of time, Spain's entire system of roads in suitable shape for motor car traffic, the Barcelona Automobile Club urges the construction of a circuit highway. This highway would enable tourists entering at Bayonne to travel through central Spain to Seville, and thence, following the Mediterranean coast, to the French frontier, covering the principal points of interest, viz, Vittoria, Burgos, Valladolid, Madrid, Toledo, Ciudad Real, Cordova, Seville, Malaga, Granada, Murcia, Alicante, Valencia, Tarragona, Barcelona, Gerona, and La Junquera. In addition to this circuit highway there are connecting highways which, it is stated, are already in fairly good shape. These roads are those from Barcelona to Madrid by way of Saragossa and Guadalajara, and the roads in the north of Spain and to Lisbon. The circuit highway as proposed would be about 1,674 miles.

Surprise in the Ventoux Hill-Climb

AVIGNON, FRANCE, Aug. 21—An average of 37.6 miles an hour with a standing start up a winding hill measuring 13½ miles, beginning with a grade of 6 per cent, increasing to 9, 10, and finally 13 per cent, can be considered satisfactory going, even for a big racing car; but when the performance is accomplished by a little one-lunger of slightly less than 4 inches bore it is nothing less than astounding.

Nine years ago, when the attempt was first made to capture the wild Mont Ventoux hill, the mere ability to reach the top was considered remarkable. Cars have progressed some since 1902, as is proved by the fact that Boillot with his one-lunger Lion-Peugeot this year beat all comers by racing to the top in 21 minutes 30⅘ seconds, getting very near the record established a year ago by a 155-millimeter four-cylinder Brasier racing car. The test is the high-water mark of hill-climbing, for, starting at an altitude of 970 feet, the course rises in 13½ miles to 6,216 feet, the grades being 2½ miles at 6 per cent, 6 miles at 9 per cent, 4 miles at 10 per cent, and the remaining portion beginning at 10 and ending at 13 per cent.

This year's climb was marked by an accident which put Gasté's six-cylinder Rossel out of business almost at the commencement, and made the victory easy for Boillot's Lion-Peugeot. While taking a sharp turn at nearly 60 miles an hour the Rossel skidded and went over into the ditch, with a broken arm for the driver. The Lion-Peugeot, which then took first place, is the familiar single-cylinder racer of 3 9/10 by 10 inches bore and stroke, holding all world's records for its class. The motor was designed by Boudreau & Vernet, of Paris, and is remarkable, in addition to its long stroke, for the use of three intake and three exhaust valves.

In the same section second best time was made by the Spanish car Hispano-Suiza, having a four-cylinder motor of 2½ by 7 4/5 inches bore and stroke. Piloted by Chassaigne, it was clocked in 22 minutes 31⅘ seconds. Third place went to Giupone in a one-lunger Lion-Peugeot identical with the winner, and fourth position to a Hispano-Suiza similar to the one which took second place. Ignoring all class distinctions, however, second best time was made by Zuccarelli's Hispano-Suiza. The results were:

FIRST SECTION

Car and driver	Bore	Stroke	Time
Lion-Peugeot, Boillot	3.9	10	21:30.4
Hispano-Suiza, Chassaigne	2.5	7.8	22:31.4
Lion-Peugeot, Giuppone	3.9	10	24:2
Hispano-Suiza, Pilleverdie	2.5	7.8	24:38.4

SECOND SECTION

Brazier, Ducreux	2.7	4.7	38:35.2
Brazier, Bablot	2.7	4.7	39:6.4
Brazier, Aligeo	2.7	4.7	41:1.2

FOURTH SECTION

Hispano-Suiza, Zuccarelli	3.3	6.5	21:56.2
Sigma, Meynet	3.3	4.5	30:5.6
Tribet, Hanbourdin	2.9	4	31:22.8

EIGHTH SECTION

Opel, Joerns	4.5	6.9	23:13

Lion-Peugeots, single-cylinders; Tribet, six-cylinders; all others four-cylinders.

It might be recalled that the Mount Ventoux course is the longest and, some say, the most difficult of any upon which hill-climbs have or are being held in Europe. The gradient varies from 6 to 14 per cent, the steepest part of the whole course of 21.6 kilometers or 13.4 miles being the last ½ mile, which is a 14 per cent grade.

The first meeting up this Ventoux mountain was held in 1902 and won by Chauchard, in a Panhard-Levassor, in 27:17. In 1903 Danjean, in a Richard-Brasier, climbed the 13.4 miles in 25:25. Rougier made it a victory for the Lorraine-Dietrich in 1904, when he made the best time, 21:12⅖. Cagno came with a 120-horsepower Fiat in 1905 to try and lower the record, and he did, establishing a new mark, which was 19:30. In 1906 Collomb in a Rochet-Schneider was the winner, in 24:40. Rougier for the second time was a winner in 1907, when he drove up in a Lorraine-Dietrich in 19:30⅘, missing Cagno's record by only ⅖ second. In 1908 Nablot in a 120 Brasier racer succeeded in breaking the record by making the climb in 19:08⅘. Again last year Bablot was the winner, also in a Brasier, and again the record time was lowered, this time to 18:41, which is at the average of 43 miles an hour. This may not look very fast, but old timers and experts consider it a finer performance than a kilometer on a level road at 100 kilometers an hour.

S. A. E. AFTER STANDARDIZATION

New York, Aug. 31—hTe Society of Automobile Engineers has appointed a standardization committee which will start immediately at its labors. This committee is as follows: H. E. Coffin, ex-officio; Coker F. Clarkson, secretary; Henry Souther, James H. Foster, H. S. White, Charles T. Jeffery, Elwood Haynes, H. W. Alden, Arthur Holmes, W. H. Van Dervoort, D. F. Graham, G. E. Merryweather and A. C. Bergman.

THE MOTORISTS' BOOKMAN

The eighteenth edition of "Gas, Gasoline, and Oil Engines" by Gardner D. Discox is a 476-page, cloth-bound book dealing with the gas, gasoline, kerosene and crude petroleum oil engines. Explosive motors for stationary, marine and vehicle power are dealt with at length. The Norman W. Henley Publishing Co., New York, is the publisher.

French Motor Routes

In the "Motor Routes of France, Part 1, dealing with tours to the chateaux of Touraine, the Pyrenees, and the Rhone valley, the author, Gordon Home, has followed the same system as in his "Motor Routes of England," employing also the same large clear type to avoid any difficulty in reading while riding. At the commencement of each section, all the essential facts are tabulated under such headings as notes for drivers, distances along the road, and interesting objects on and off the road. The text is pleasingly written, brief but lucid references being made to the historical places passed through. Sixteen most charming full-page illustrations in colors, and sixteen in black and white add much to the attractiveness of the book, while the sixty maps and plans add to the informative value of the book. A. & C. Black are the London publishers, and Macmillan Co. the New York publishers.

For Motor Cyclists

"A B C of the Motor Cycle," by W. J. Jackman, is a 224-page book dealing with the principles of construction and operation of a motor cycle. This volume, profusely illustrated, takes up the history and evolution of the motor cycle, discusses the mechanism of a motor cycle and its ignition and lubrication system, the tires, and the care and cost of operation. It is published by the Charles C. Thompson Co., Chicago.

Amateur Dynamo Work

"Dynamo Building for Amateurs" is a practical treatise showing how an amateur can construct and wire an experimental 50-watt dynamo, or motor, with a small foot lathe. Instructions for the different operations are clearly given, and the student will find the illustrations showing the construction of the different parts of great assistance. This volume is especially elementary and gives diagrams for practically every operation that will confront a beginner in this matter of armature winding. The instructions are especially explicit. The following excerpt on armature winding will bear this out: "The best means of holding the armature for winding is in the lathe. The commutator end of the shaft is gripped in the jaws of the chuck and the other end of the shaft is supported by the back center of the lathe. The right hand is used to manipulate the wire and keep it taut. As the wire is laid into the slots it is pressed into position with a wood tool, illustrated herewith." Each operation is outlined in detail, making it possible for an amateur to intelligently wind the armature by following the book instructions. The book contains eighty-four pages, is written by A. J. Weed and published by Norman W. Henley Pub. Co., New York.

Book On Aviation

"The Conquest of the Air" is a 192-page book by A. Lawrence Rotch, and from the press of Moffat, Yard & Co., New York. In the opening chapter the author, who was the founder and director of Blue Hill meteorological observatory, takes up the subject of sounding the air for prevailing air currents and pressures, giving the results of his experiments at the Blue Hill observatory. The following chapters deal with the subject of aërostation, the dirigible balloon, and the latest types of flying machines.

The Readers'

EDITOR'S NOTE—In this department Motor Age answers free of charge questions regarding motor problems, and invites the discussion of pertinent subjects. Correspondence is solicited from subscribers and others. All communications must be properly signed, and should the writer not wish his name to appear, he may use any nom de plume desired.

WOULD RAISE THE TIMER

DUNCAN, OKLA.—Editor Motor Age—Will Motor Age kindly answer, through the Readers' Clearing House, the following question: Can a bevel gear be put on the end of a camshaft on a model T Ford touring car so as to raise the timer, as on the end ofetaoishrdluetaoiemfwp as on the Rutenber motor? If so, can you tell me where I can have the same made ready to attach to the car?—J. B.

It is possible, but highly impracticable, to change the design of the Ford car as above suggested. Motor Age knows of no concern manufacturing devices of the kind described which could be readily attached. These timers, although not as accessible as on the Rutenber motors, rarely require attention when once put in order, and it is for this reason that an out-of-the-way place for them is maintained in the design.

RACING WINDSHIELDS

Akron, Ia.—Editor Motor Age—Answering an inquiry in issue of August 25 from Crescent City, Ill., the circular racing windshields are carried by the Phoenix Automobile Supply Co., of St. Louis, Mo.—Wade & Burnight.

ENGINE OVERHEATS

Chicago—Editor Motor Age—Will Motor Age kindly inform me what can be done with a model 25 Oakland engine which constantly overheats. If the road is comparatively level or if a run can be made for all the hills, it does not overheat much, but just as soon as it commences to pull slow and hard it immediately boils the water. This, of course, lessens its pulling power.—George Casey.

Motor Age would advise that you consult the factory and state your trouble. For Oakland cars used in a hilly territory or in parts of the country where the roads are heavy, the Oakland company is prepared to supply a fan which may be attached to the motor in less than half an hour, and which greatly increases the efficiency of the cooling system. It is quite possible, however, that your trouble is due to an accumulation of carbon in the cylinders, retarded ignition, faulty carbureter adjustment, or that you are using a carbureter of different design than that supplied with the motor originally. The car of which you complain has a specially designed carbureter, and satisfactory results are generally not obtained when another carbureter is fitted.

ASKS ABOUT BUICKS

Youngstown, O.—Editor Motor Age—Will Motor Age please answer the following questions through the Readers' Clearing House:

1—What is the difference between the Marquette-Buicks and the regular Buicks? Where is the former made, how much does it sell for, and what are its specifications?

2—What are the complete specifications of the Buick Special? Where is the radiator?

3—Is it possible to start a Buick 17 on a Remy magneto? If so, how and what must be done to the magneto?—Subscriber.

1—There are two models of Marquette-Buick cars, which are designated 16-A and 16-B; 16-A has a four-cylinder motor with a bore of 4.36 inches and a 5-inch stroke, and sells for $1,950 f. o. b. factory and a slight charge for extra lamps and fenders; 16-B is identically the same, as far as specifications show, except that the motor has a bore of 4½ inches, and it sells for $2,950, with the same charge for lamps and fenders. The Marquette-Buicks are made at Saginaw, Mich., and the regular Buicks at Flint, Mich. The design of all the four-cylinder Buick models is practically the same, and complete specifications in catalog form may be obtained from the Buick factories or agencies.

2—Motor Age has no record of the specifications of the Buick Special. The radiator is crescent-shaped, to conform to the shape of the hood, and it is located just in front of the dash, arching over the outside of the hood.

3—It is possible to start almost any car on the magneto by advancing the spark lever considerably and then spinning the motor. The safest way is to start turning the starting crank while the switch is off, then, as soon as you are able to turn it rapidly and have imparted some momentum to the flywheel, have someone turn the switch to the magneto side. This will tend to eliminate the danger of a back kick.

TIGHTENING LOW-GEAR CLUTCH

Grand Rapids, Mich.—Editor Motor Age—Through the Readers' Clearing House tell me how to tighten the low-gear brake band on a model B Fuller. I have made every adjustment I can see is possible, but when I throw in high the car is jerked ahead.—Carol Seven.

It would be advisable for you to bring your car into a position where there is plenty of light, then remove the dirt pan extending beneath the motor and gearset, so that a good view of the entire planetary gearset may be obtained both from above and below. The adjusting nuts provided for tightening the clutch-bands for low and reverse speeds then will be easily found. The high-speed or direct drive is obtained by pressing together two steel disks inside the change-gear mechanism. The high-speed clutch is operated by the side lever, which, when it is pushed forward, forces a cone between the dogs on the clutch spider. These dogs in turn bear on the clutch plates and give the leverage necessary to hold the plates together and drive the car. Now, it is possible that you have been driving on the low gear for some time with the band insufficiently tight, so that it has been slipping to such an extent that the lining material is burnt and glazed, or, it might be soaked with oil. If these are the causes of the trouble, the band will have to be relined with fresh friction fabric, or removed and soaked in gasoline. If merely soaked in oil, relief may be obtained by simply squirting gasoline over the surface of the friction fabric. The jerking which takes place when the high-speed gear is engaged may be due to a slipping clutch, or to misfiring of the motor. Perhaps you throw in the high speed too suddenly, before the car has gained sufficient momentum on the low speed, or possibly you do not let the motor speed up enough to generate the power required when high speed is thrown in. Misfiring, due to a weak battery, fouled plug, burnt or poorly adjusted contact points on the coil, or a carbureter which is out of adjustment or requires cleaning, also might be the cause of the jerky action of the car. To tighten the high-speed clutch, loosen the clamping screw that holds the spider firm on its thread. Then turn the spider to the right till the side lever, when pushed forward, goes in with a decided snap. Tighten the clamping screw before trying the side lever. If the spider has been turned too far, the cone will not go in at all. When set to the desired tension, tighten clamping screw firmly. Unequal or excessive wear of the clutch dogs has also been known to give trouble in this type of clutch; such cases, however, are remote, but perhaps worth mentioning.

PECULIAR MOTOR HEATING

Memphis, Tenn.—Editor Motor Age—I have read with considerable interest many of the Readers' Clearing House explanations as to why a motor heats, but I believe my experiences with heating this year have been unique. I purchased a new four-cylinder car, which started to heat after I had driven it approximately 500 miles. I know the heating was not due to any faulty design of the motor, because thousands of motors of the same design are in daily use and do not heat. Nevertheless, in my case the trouble was most exasperating. I started following the Glidden tour route through Arkansas, Texas, Oklahoma and Kansas. The first day out I took on water twice during the forenoon. In the afternoon the radiator was filled three times. I thought for certain the overheating was due to carbon, because I was using 6 or 7 gallons of oil every 250 miles, which was greatly in excess of what everybody told me I should use. The night of the first day I had the cylinders well cleaned out with kerosene

Clearing House

EDITOR'S NOTE—To the Readers of the Clearing House columns: Motor Age insists on having bona fide signatures to all communications published in this department. It has been discovered that the proper signature has not been given on many communications, and Motor Age will not publish such communications, and will take steps to hunt down the offenders of this rule if it is violated

and new oil put in the crankcase. The following morning I had not gone 10 miles until the radiator was steaming and more water was needed. On this day the trouble increased and I added water over twenty times. As the weather was very hot it was impossible at times to drive more than 20 miles per hour without losing great quantities of water. In order to correct the trouble I added oil every 25 or 30 miles.

With this increased trouble on the second day I decided that kerosene had not cleaned the carbon, so I had the cylinders taken off and the carbon scraped from the valves, piston heads, and combustion chamber. This, with the addition of oil, was looked upon to remedy the trouble. On the following morning the heating trouble was worse than ever and I made thirty-two stops for water during the forenoon, it being necessary to purchase some water cans and carry a supply of water with me on the car. I was on the verge of discouragement when I discovered a slight leak in the radiator and thought I had discovered the trouble. I had this repaired, but the heating continued. Being several hundred miles from home, and it being impossible to continue further under the existing circumstances, I wired the factory to send a mechanic with a new radiator. The next evening the mechanic was on hand and with three others from the garage where I stopped he entirely overhauled the motor, taking up the connecting rod bearings, removing the carbon, examining the water pump and fitting the new radiator. On the following morning I took the mechanic along, feeling that my troubles were undoubtedly over. I was not 5 miles out until the heating returned, and all that day it was a case of pour in water and oil. In the meantime I might say the water system had been cleaned out several times, the correct timing of the ignition had been looked into and the gasoline in the carbureter cut to a minimum. I completed my trip and had the motor once more taken apart, during which the trouble was found, which was as follows: Rubber gaskets were used between the waterjackets and the return water pipes to the top of the radiator. The heat had softened the rubber so that it squeezed out, partly closing the opening through the gasket. This restricted the flow of water and was the sole cause of the continual trouble. I can't understand how the different workmen who had removed the cylinder casting when the carbon was scraped off could have missed noticing these gaskets, nevertheless they did. With fresh gaskets of the proper size inserted the trouble was remedied. Although the trouble was remedied, my motor has been in the ordinary phraseology, shot to pieces, and it is questionable if without a new set of piston rings and some new bushings it will ever give the power it should.

Since my season of trouble I have talked with several others who have had similar experiences, particularly where rubber gaskets are employed. One owner discovered that the aluminum water pipe was not of the internal diameter it was supposed to be, because of the rough casting which was sufficient to restrict the necessary circulation and cause heating. This trouble was rectified by having the water pipe reamed out at the flange.—Reader.

AID TO COOLING

Bonesteel, S. D.—Editor Motor Age—Is a large radiator hose more effective as to cooling than a small one? I have a two-cylinder 5 by 4 Davis engine, and the hose is just common ¾-inch garden hose. Would the thermo-syphon cooling be more effective with, say, 1¼-inch steam hose?—Ben Turgeon.

The larger hose would not be more effective unless the outlets and inlets from and to the radiator and cylinders also were enlarged. Anything that will promote the circulation of water through the cooling system will increase its cooling efficiency, and by enlarging the water passages the resistance to the flow of the cooling medium is reduced, hence the circulation increased.

GUN METAL FINISH

Biloxi, Miss.—Will Motor Age, through the Readers' Clearing House, advise me if there is any solution which will put a gun metal finish on brass lamps?—W. T. Bolter.

There are solutions by means of which a gun metal finish may be put on brass lamps, but they must be applied through the medium of an electro-plating process. Motor Age has no record of any solution that may be simply applied with a brush or cloth which will bring about successful results.

CHICAGO TO TERRE HAUTE

Antigo, Wis.—Editor Motor Age—Will Motor Age kindly publish a route from Chicago to Terre Haute, Ind., and also advise the distance?—W. E. Butterfield.

Perhaps the best route to Terre Haute would be to leave Chicago through South Chicago, Hammond, Dyer, St. John, Crown Point, Orchard Grove, Shelby, Thayer, Virgie, Rensselaer, Remington, Wolcott, Montmorenci, Lafayette, Odell, Attica, Rob Roy, Covington, Danville, Perrysville, Cayuga, Newport, Clinton and Terre Haute. This makes a total distance of 251.9 miles. Another route would be by way of Harvey, Homewood, Chicago Heights, Steger, Momence, Kankakee, Danforth, Paxton, Rantoul and Champaign. In dry weather this is not a bad road, but after heavy rains it is almost impassible. From Champaign journey on to Homer, Catlin, Danville, Perrysville, Cayuga, Newport, Jackson and then Terre Houte. This route is about 240 miles.

OILS HARD TO TEST

Lyons, Kan.—Editor Motor Age—The one bugbear of motorists is cylinder oil, and I find from experience that price is not an infallible criterion of quality. Will Motor Age, through the Readers' Clearing House, pass judgment on the following test: I took equal quantities of two medium-weight oils—No. 1, a light straw or amber in color; No. 2, a dark wine color—and mixed an equal quantity of gasoline with each, placed the dishes where there was no draft and set them afire. No. 1 was entirely consumed, leaving a small quantity of a black, sticky substance. No. 2 was but one-third consumed, the residuum being only slightly darker in color with a high state of viscosity as tested by finger and thumb. Will Motor Age tell me if this test of the lubrication and freedom from carbon of these samples? If so, which is the better oil?—E. W. Glaze.

Your test did not give any indication of the grade of oils used. The mixing gasoline with the oils may have entirely changed the oils, by affecting one more than the other. It is a fact that oils are very sensitive liquids and the carbonizing qualities of them might have been quite altered by your test. The best test of an oil is to buy a grade that is known to be specially free from carbonizing troubles. It is impossible to tell by sight or with the fingers whether an oil will readily carbonize or not. The temperature of the combustion chamber is a big factor on the oil, as one oil will carbonize at much lower temperatures than others.

USE OF GALVANIT

Onawa, Ia.—Editor Motor Age—In Motor Age, issue March 3, page 14, is given a formula for plating with zinc, nickel and other metals. I have tried the formula twice, in the first instance substituting nickel salts for the zinc, and the second time using nickel filings. I was unsuccessful both times. Will Motor Age tell me wherein I failed, and if there are other ingredients which are secret? Where can I secure the galvanit powder for plating?—K. A. Pullen.

Your failure to obtain satisfactory results may be due to an error either in the composition of the galvanit powder or in the manipulation of the process. The prepared galvanit powder may be obtained from the Galvanit Mfg. Co., 6 and 7 George stret, Hanover square, London W., England, with full particulars.

ADVANTAGES OF VARIOUS VALVE TYPES

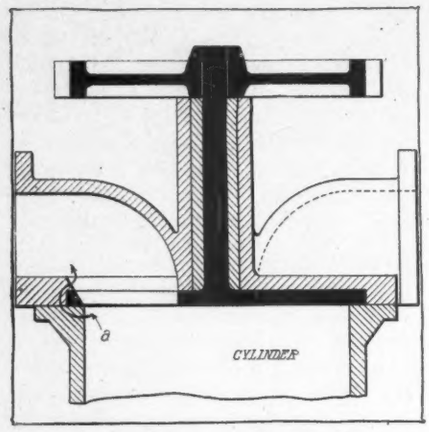


FIG. 11—REMOVABLE CYLINDER HEAD AND VALVE OF GREATER DIAMETER THAN CYLINDER BORE

Large-Diameter Valve

THE flat disk valve can be improved in respect to cylinder filling, if it can be made larger than in Fig. 9. This can be done as shown in Fig. 11. The engine there represented differs from Fig. 8 in having a removable cylinder head and a valve of larger outside diameter than the cylinder bore. It will be noticed that the leakage path around the outer valve edge is rendered more difficult in this construction, if the valve seats are sufficiently tight. Therefore, the part corresponding to p in Fig. 9 can be made narrower here, thus increasing the size of the valve ports. Suitable dimensions are given in Fig. 12. The area of the port is

$$S = 2\pi \times \frac{52.5}{360} \times 1.687 \times 1.875 = 2.9$$

square inches,

or 32 per cent more than that of Fig. 9 and of the poppet valves. The lines v_2 in Fig. 10 represent the variation of the inlet opening with this larger valve, and curve W_2 the corresponding gas velocity. The area enclosed by lines v_2 is considerably larger than is obtained with poppet valves. It completely covers that of cam 1. The opening is slightly surpassed by the opening cams of curves 2 and 3 at certain points, but for the most part it exceeds them. With this rotary valve the ports open and close even more quickly than with cam 3, which further improves the construction. Of course the removable cylinder head had its disadvantages, being more expensive, requiring separate means for introducing water into the cylinder head, for cooling the valve seat, the exhaust connections, etc. However, the inlet and exhaust ports can be made more easily to register accurately with the valve port with a removable cylinder head than with integral heads.

Larger port areas are obtainable if a rotary valve is made conical, as in Fig. 13.

EDITOR'S Note — The following paper on "Slide, Rotary and Piston Valves versus Poppet Valves for Gas Engine Service," is by Eugene P. Batzell, and was read at the recent meeting of the Society of Automobile Engineers in Detroit.

(Continued from page 32 last week)

With similar dimensions, as in Fig. 9, and a cone angle of 120 degrees, the port area would be that of Fig. 9, divided by the cos of 30 degrees, or

$$S_{13} = \frac{2.2}{.866} = 2.54 \text{ square inches.}$$

The 15 per cent increase is not to be despised, but the valve, being conical, works with greater friction, is liable to wear more, and is more difficult to fit.

Cap-Form Rotary Valve

Another rotary valve construction giving great port area is shown in Fig. 14. The valve is of cap form, and the port can be made in the flat upper part, similar to m in Fig. 9, and extending through a part of the cylindrical height. Such a port, with the dimensions given in Fig. 14, would have an area

$$S_{14} = 2\pi \frac{52.5}{360} \times 1\tfrac{5}{8} \times 1\tfrac{3}{4} \times \tfrac{3}{4} \times \frac{52.5}{360} \times \pi \times 5 = 4.3 \text{ square inches.}$$

The effective area, however, will be reduced considerably, owing to the character of gas flowing through an opening of this form; but, nevertheless, it ought to be considered larger than the equivalent port of a conical valve, represented by dotted lines in Fig. 14. This construction, however, is hardly practical. To prevent gas leaks, the valve has to fit inside the cylinder very accurately, and the high temperature of the explosion chamber will make this fit of a very uncertain nature. In the constructions shown in Figs. 8, 11 and 13 the valve may have considerable play at its circumference—a few thousandths of an inch—without causing gas leaks, the tightness here being due to the pressure of the valve against its seat. Expanding rings inserted at the valve rim are also practical with these constructions, if the valves without rings are not tight enough, but if a valve after Fig. 14 is made with a play in the cylinder sufficient to prevent it from sticking, the expanding rings will not help to prevent leaks, because all the ports remain connected with each other through the play. Oil can be led to this play to serve as a medium through which would be secured tightness, but this does not seem to be good, because a great quantity of oil will be consumed; the motor will be carbonized and will have a smoky exhaust.

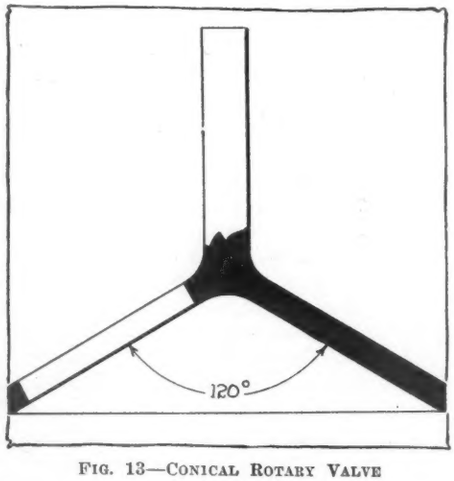


FIG. 13—CONICAL ROTARY VALVE

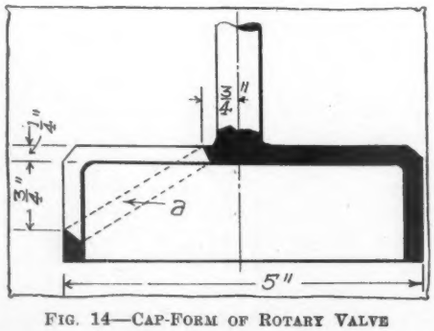


FIG. 14—CAP-FORM OF ROTARY VALVE

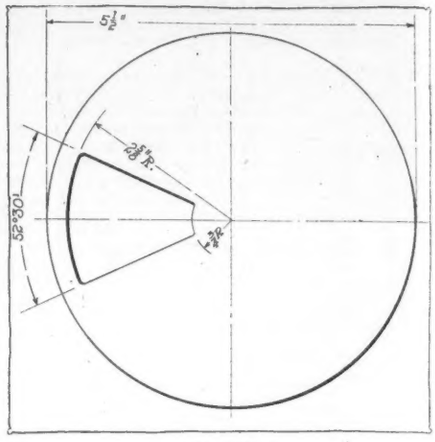


FIG. 12

Double Rotary Valve

Large port area can be obtained by using a double valve, consisting of two disks revolving in opposite directions at half crankshaft speed. This construction carries with it the objection that a double valve requires double driving means, and the single valve already necessitates a number of gears and other parts. One of such double-valve constructions is represented in Fig. 15. The valve which bears against the cylinder head has a single port a Fig. 15, which registers in its motion with the inlet i and exhaust port e of the cylinder. In the outer valve, from the side of the explosion chamber, two ports are necessary, because the inlet period has to follow the exhaust closely. At the moment of exhaust closing the port a and the exhaust port of the other valve are in the position illustrated in Fig. 16, in which the disc motion is trans-

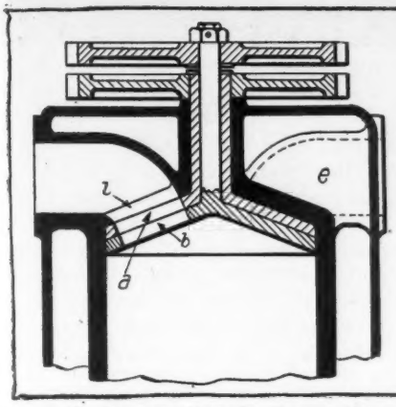


FIG. 15—DOUBLE ROTARY VALVE—THE TWO DISKS ROTATE IN OPPOSITE DIRECTIONS AT HALF THE CRANKSHAFT SPEED.

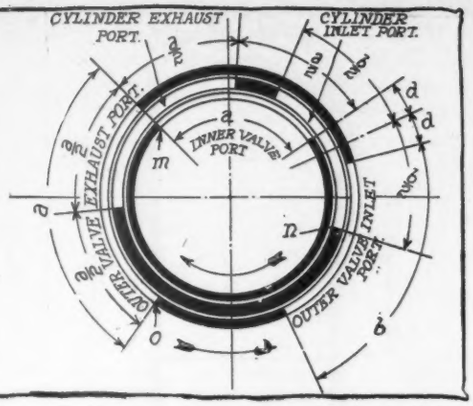


FIG. 16—POSITION AT TIME OF EXHAUST CLOSING OF FIG. 15 VALVE—MOTION TRANSFERRED CYLINDRICAL FOR CLEARNESS.

formed to a cylindrical for clearer understanding. If the same port should also be used for the inlet, another port b has to be provided in the outer valve, which port b could register with the cylinder inlet i at the same time with the port a. The port a should not come to the cylinder ports e and i simultaneously with ports b and c at other moments than desired. That imposes a certain condition on the size of the angles, which enclose these ports. For instance, the valve edge m has to pass the edge of the cylinder inlet port n before the edge of o of the other valve reaches it. This necessitates that

$$a + d + \frac{b}{2} < x, \text{ where } x = 360° - \left(2a + d + \frac{b}{2}\right)$$

or $3a + 2d + b < 360°$.

The angle d, which indicates the interval between exhaust closing and inlet beginning, can be positive, zero, or negative, but is generally small.

From the above disparity it will be seen that the double-valve construction in question permits somewhat narrow limits for the exhaust and inlet, decreasing its practical value. If quarter-speed double valves are used, nothing can be gained in the size of port area, compared to single half-speed valve, the drive complication increases.

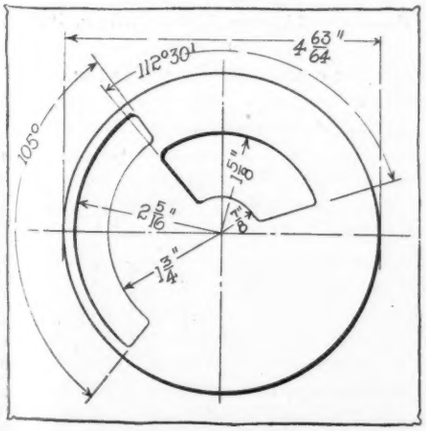


FIG. 17—A DOUBLE-ROTARY VALVE CONSTRUCTION

The plane view of another double-valve construction is represented in Fig. 17. Here the valve ports for the inlet and exhaust are separate and are shifted from each other radially. Any desired motor timing can be obtained, but the sizes of the ports are small. With dimensions of Fig. 17 the port areas will be

$$\text{Exhaust } Se = 2 \times \pi \times 1\tfrac{1}{4} \times \frac{112.5}{360} \times \tfrac{3}{4} = 1.85 \text{ square inches.}$$

$$\text{Inlet } Si = 2 \times \pi \times 2\,1/32 \times \frac{105}{360} \times \frac{9}{16} = 2.1 \text{ square inches.}$$

Double-Valve Designs

Still another different construction of half-time double valves with larger separate inlet and exhaust ports can be obtained by altering the cap valve of Fig. 14. Such a combination is given in Fig. 18. The outer cap valve has a small play inside the cylinder and is ring-packed at the ends of its cylindrical surface to insure greater tightness. The ports are located thus: one in its cylindrical part, the other in the flat top part. The second valve may also be made of the cap form, fitting inside the first one with or without expanding rings with correspondingly located ports; but in Fig. 18 the second valve is shown of the flat-disk form, which can reasonably be made, if the port in the cylindrical part is sufficiently large, without increasing it by the double-valve motion. The port in the top part will be about twice the size of that, which the valve in Fig. 8 permits. In other respects, the construction after Fig. 18 appears to be better and more practical than one with the single valve of Fig. 14.

Revolving Sleeve Valves

Other types of rotary valve constructions are those with revolving sleeves. These sleeves can be single, double and oppositely revolving; they can be placed inside the cylinder with the piston bearing against them, Fig. 19, or outside the cylinder and its waterjacket, etc. With the last mentioned arrangement, Fig. 20, good cooling of the valves is obtained, but the motor becomes bulky and of great length in case of multi-cylinder construction. The size of valve ports in these constructions will, of course, greatly depend on the chosen dimensions. For instance, if we assume a motor after Fig. 19 to have 25 per cent compression space, counted from the total cylinder volume, this space will be about 2 inches high, and the ports could possibly be made 1¾ inch high. The maximum area for the inlet port on the outside of the sleeve valve will be

$$S = 2\pi \times \frac{52.5}{360} + 2\,11/16 \times 1\tfrac{3}{4} = 4.3$$

square inches.

Rotary Has Triangular Opening

Similarly large valve ports will be obtainable with motors of the type of Fig. 20. In all the rotary valve systems, where the valves are driven at constant speed, the same triangular shape of valve opening diagram exists. The rotary sleeve valves have to meet from the practical side the same objections which were directed against the sliding sleeves. In the present case some of these objections have greater reason. For instance, if the valve ports remain exposed to the temperatures of the explosion chamber during the whole time, they are more apt to burn out or to work carbon particles in between the valve and the cylinder. The relative motion of the valve and the cylinder occurs at much higher velocity when the valve rotates continuously than when it slides up and down; and more care as to lubrication is required. Of course, the sleeves have not to fit tight into the cylinder, play being left for the lubricant. The sleeves themselves might or might not be provided with expanding packing rings, which in their turn might be round or elliptic.

To Drive Rotary Valves

The question of power required to drive rotary valves presents considerable interest. The rotary sleeves, if properly made and lubricated, may consume very little power, particularly systems like that of Fig. 20, in which the valves are not exposed to the explosion force or to the side

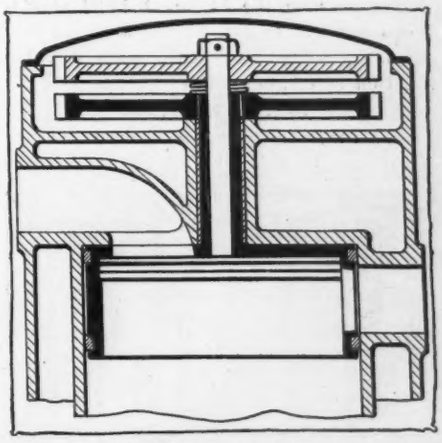


FIG. 18—MODIFICATION OF CAP VALVE IN FIG. 14

pressure of the piston on the other side. Systems with disk or cap valves are subjected to friction, caused by the full force of the explosion, which might lead one to believe that a great amount of power is required for their drive. This amount of power can be figured out approximately as follows: We will assume an evenly distributed pressure of the valve against the seat of a mean valve of p. One can say that the power necessary to overcome the frictional resistance of an elementary band, see Fig. 21, of a radius r and of a width dr is

$$p \times f \times 2\pi \times r\,dr \times \frac{R.P.M.}{2} \times 2\pi \times r,$$

where f is the coefficient of friction and the revolutions per minute are expressed in motor revolutions for a half-time valve. For the total valve disk, considered uninterrupted by ports, the required driving power R per minute is

$$R = p \times f \times 4\pi^2 \frac{R.P.M.}{2} \int_{r_1}^{r_2} r^2 dr$$

or, after integration

$$R = p \times f \times 4\pi^2 \frac{R.P.M.}{2} \times \tfrac{1}{3} r_2^3, \text{ because } r_1$$

is negligible.

Substituting $p \times \pi 2^2_2 = P$, which in this case might be considered equal to the piston pressure, we will have

$$R = P \times f \times R.P.M. \times \tfrac{2}{3} \pi r_2.$$

The coefficient f may be taken as independent of the pressure and the velocity. Therefore, the pressure P can be substituted by the mean piston pressure, latter being expressed through the developed motor power as

$$P = \frac{H.P. \times 33{,}000}{E \times R.P.M. \times 2 \times Stroke}$$

Here E expresses the mechanical efficiency of the motor, and the motor stroke S has to be given in feet. The power consumed for driving the valve thus will be found to amount

$$Rhp = \frac{H.P. \times f \times \pi 2_2}{S \times E \times 3}$$

For instance, our motor, if developing 10 horsepower on the brake at 1,000 revolutions per minute and having a mechanical efficiency of 83 per cent., with a valve friction of 0.1, consumes

$$Rhp = \frac{10 \times 0.1 \times \pi \times 2.5,}{.5 \times .83 \times 12} = .525 \text{ H.P.}$$

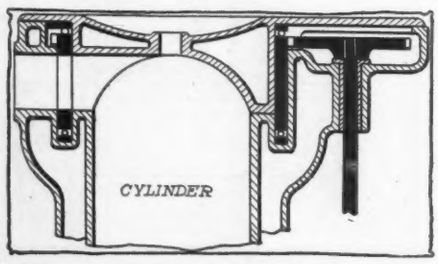


FIG. 20—REVOLVING SLEEVE VALVE OUTSIDE CYLINDER

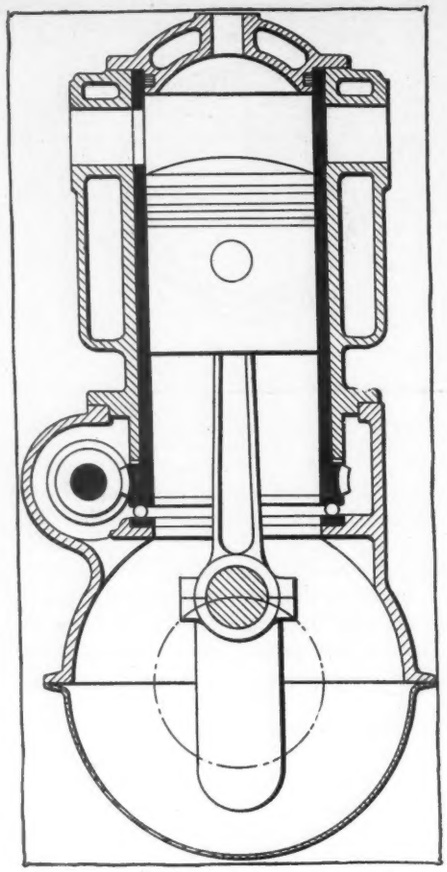


FIG. 19—REVOLVING SLEEVE VALVES INSIDE THE CYLINDER

The double rotary valves after Fig. 17 will consume double, or about 1 H.P., and

valve Fig. 15 $\frac{1 \text{ H.P.}}{\cos 30^0} = 1.15$ H.P. However, these figures might be decreased about 15 per cent, because the valve does not represent a full disk, being provided with ports which diminish its surface exposed to the cylinder pressure.

The Power Required

The coefficient of friction was assumed here to be only 0.1, which generally would be the case if some reliable lubricant were provided; otherwise it will be greater. From all the foregoing there can be drawn the conclusion that the rotary valve systems, with valves placed directly inside of the explosion chamber, use for their drive not a small amount of power, and means to lessen it are desirable. In some older constructions the arrangement illustrated in Fig. 22 has been proposed. It aims to provide an equalizing valve consisting of two disks a and b, in one of which the exhaust port is located, and in the other the inlet. This construction cannot be considered as answering its purpose, because only a valve theoretically true will be equalized. The equalizing effect is lost, due to the unavoidable in practice through slight difference between the distances of the valve seats in the cylinder and on the valve shaft. Adjustable valve seats will not help the matter, because the adjustment will be distorted from unequal expanding caused by temperature difference. At some moments the valves will be leaky and at others they will stick. Besides, the valves are smaller than the cylinder size, and carry but small ports. The shielding of the valve from the explosion pressure in a manner like that illustrated in Fig. 24 seems to be more practical. The disk valve a is separated from the explosion chamber by a partition b of the waterjacket, which serves also for cooling the valve seat. It can be foreseen that the gases tending to penetrate into the small play between the valve and its lower seat will be cooled and choked with a drop in their pressure. Practically, only that valve surface which passes over the ports connecting with the cylinder inside will be exposed to the pressure therein. Thus the valve driving power can be reduced 50 to 60 per cent, and besides this construction Fig. 24 carries with it other advantages. It might be proper to mention here that generally more care should be taken that the silent valve types are provided with proper lubrication, though not with an excess of oil. This is an important factor to be considered in this style of valve construction, and one which goes a long way toward the efficiency of the design in operation.

Cylindrical or barrel types of rotary valves also give triangular opening diagrams. The simplest of these is represented in Fig. 25. Here a valve a is formed with a straight central passage b, through which the inlet and exhaust passages communicate with the interior of the cylinder at the proper moments. This valve rotates at one-quarter crankshaft speed. With an inlet of 210 degrees duration the valve channel can occupy at each end an arc of 26¼ degrees if the greatest possible inlet opening is desired. In such a case the inlet port of the cylinder head will also extend over 26¼ degrees, and the exhaust port for 225 degrees duration over 30 degrees. For a cylinder of 5-inch bore the valve could be made about 3 inches in diameter, with a channel 4 inches long. The maximum inlet area being equal to that of the channel passage is approximately

$$S_{24} = \pi = 3 \times \frac{26.25}{360} \times 4 = 2.75 \text{ sq. inches,}$$

or 25 per cent larger than with the poppet valves.

Such valves sometimes are made to fit

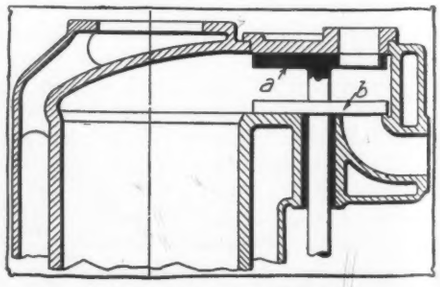


FIG. 22—AN EQUALIZING VALVE DESIGN IN USE

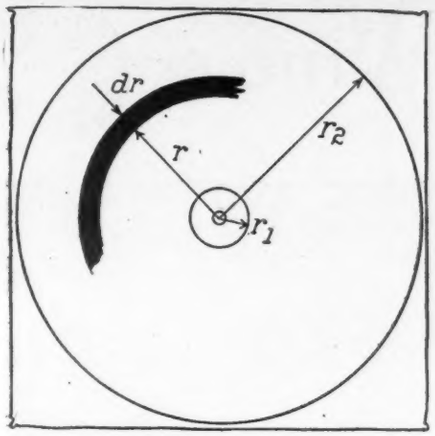


FIG. 21

with a small play inside of their chamber and to be supported only by bearings at their ends. The play is being filled by oil to give the required tight separation between the ports and the cylinders. Lengthwise the valve carries few expanding rings, which separate the ports from the valve ends. The oil introduced in the play around the valve does not serve as a lubricant, because the valve has individual bearings. It has to be fed continuously, and as it is not caught back, the whole quantity is led into the cylinder and the exhaust, soiling them. The character of the valve opening and that of gas flow with this valve would probably be as good as with the valve shown in Fig. 11, but the valve of Fig. 25 has some particularly bad features. In the construction assumed, with 4-inch port length, the cylinder pressure acts on the area of about 10 square inches of the valve. Therefore, a large bearing surface must be provided. Another bad point is that the fresh charge carries with it into the cylinder the spent gas left in the valve chamber from the previous exhaust. Also during the exhaust the quantity of fresh charge left in the channel from the previous inlet is wasted. In the valve described the volume of the channel is

$$2.75 \times 3 = 8.25 \text{ cubic inches.}$$

The piston displacement being 118 cubic inches, the compression space—25 per cent of total volume—is about 39.5 inches. Therefore the explosive mixture consists of $\frac{8.25}{39.5} \times 100 = 21$ per cent more spent gas than when the inlet and exhaust channels are separate. That makes the explosive mixture weaker and more liable to miss; the charge burns slowly and the explosive is less intensive. With a charge of 85 per cent of a complete cylinder filling, the quantity of fresh gas mixture drawn in at each inlet period is approximately $(118 \times 39.5) \times 0.85 - (39.5 + 8.25) = 86$ cubic inches, and with 8.25 cubic inches wasted each time the fuel consumption of the motor would be about 10 per cent greater. The intake gasses passing through the heated valve channel enter the cylinder at a higher temperature, and consequently more expanded. That helps to evaporate the fluid particles and cools the valves, but decreases the absolute quantity of explosive mixture drawn in, causing the motor to develop less power.

The above disadvantages may be avoided by providing separate channels for the inlet and exhaust. Different arrangements are possible. The separate channels can be placed in series lengthwise of the valve. The length of each channel need not exceed 2¼ inches, and the area of the inlet port would be reduced to 1.55 square inch, which is a very small figure for the size of motor considered. Besides, by using two separate channels, the temperature conditions of the valve are impaired. Where the exhaust passage is located, it will be quite hot, and the inlet cool, and this would intefere with the proper operation of the valve. It would be difficult to secure a tight fit to the valve without complicated construction and without liability to stick. Perhaps the simplest way would be to water-cool the valve inside, also.

Single-Valve Type

In a single valve with separate inlet and exhaust channels, like the one just mentioned, bigger port areas are obtainable if the channels through the valve are made in the form of an elbow or curved Fig. 23. Such a valve would have to rotate at half crankshaft speed because the cylinder communicates with the inlet and exhaust ports only once during its revolution. The arc occupied by the inlet port will be 52½ degrees, and the port area, retaining the 2¼-inch length, will be 3.1 square inches; but with this system also difficulties arise as the result of the valve channel being open to the cylinder at other periods than those of the inlet and exhaust. This is avoided in a half-time valve construction of Fig. 26; here both the inlet and exhaust valve passages have end ports offset sidewise, so as not to be located in the same plane of rotation and not to register with the same port openings of the cylinder. If a multi-cylinder motor is to be made with this construction, it will be advantageous to obtain the required timing through the registering of the ports from the side of the explosion chamber, then the other end port of the valve passage might be made without considering the timing, and of a narrow shape, extending on a big part of the valve circumference, as illustrated in Fig. 26, which will allow economizing in total motor length. A double valve consisting of one rotating inside the other in the opposite direction at quarter speed, Fig. 27, and with straight separate inlet and exhaust channels, would also give the same port area of 3.1 square inches as the previous one and would be free from its disadvantages. With proper cooling and lubrication this system might be of some practical value.

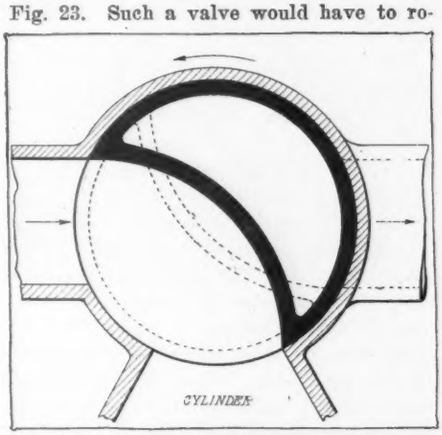


FIG. 23—TO SHIELD VALVE FROM EXPLOSION

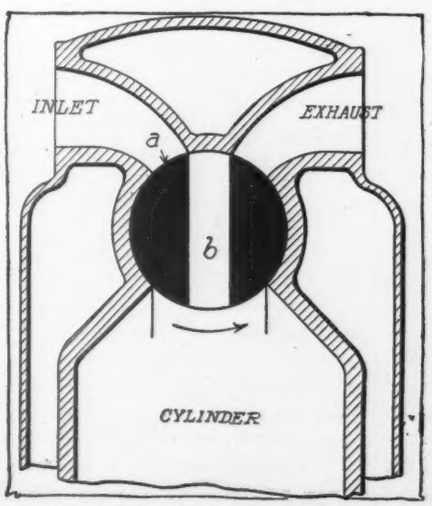


FIG. 25—SINGLE VALVE WITH SEPARATE INLET AND EXHAUST CHANNELS

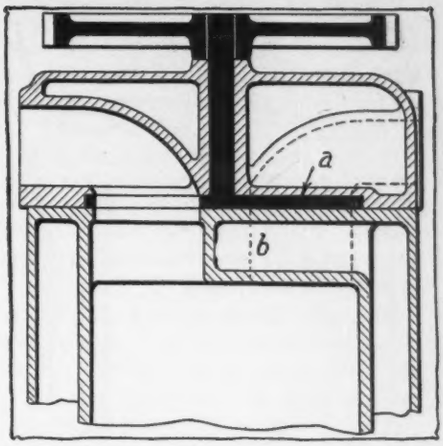


FIG. 24—BARREL-TYPE OF ROTARY VALVE

The use of an elbow channel in connection with a valve of the type shown in Fig. 24, to make it a half-speed valve with wider ports, is of little practical value, owing to the limitations it imposes on motor timing, which are similar to those mentioned previously in connection with the double-disk rotary valve. For the same reason it is impracticable to make a double valve of the type shown in Figs. 24 and 25. In all of these cases the double valve cannot be constructed for the least practical timing inside the limits given by the 360-degree of a circle.

(To be continued.)

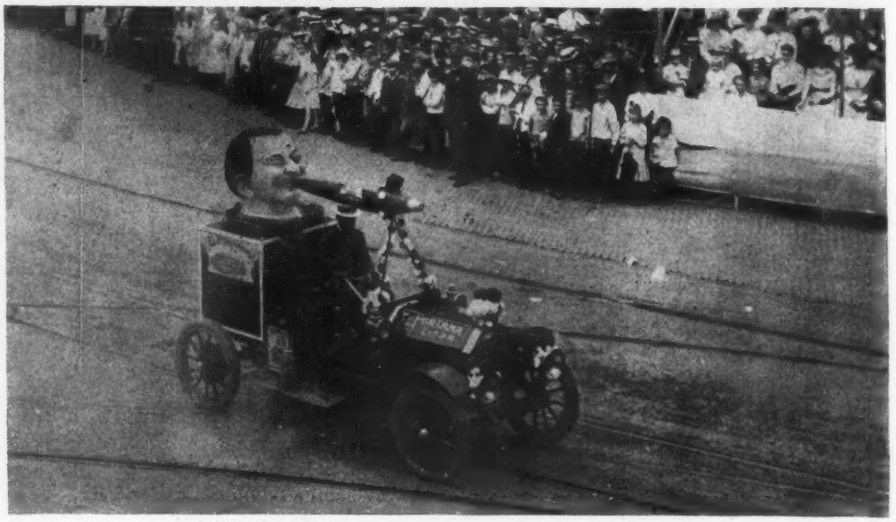
From the Four Winds

FEDERAL Picnic—The employes of the Federal Rubber Co., of Milwaukee and Cudahy, Wis., held their annual picnic at Little Muskego lake recently with more than 500 in attendance.

Speedway Prizes—In addition to the prizes of $1,000, $500 and $300 posted by the Indianapolis motor speedway for the 200-mile race of September 5 for cars of 600 cubic inches piston displacement or less, the Bosch Magneto Co. has announced that it will give $300, $200 and $100, respectively, for the cars finishing first, second and third, providing each car is equipped with a Bosch magneto during the race.

Blames the Roads—Frederick and John Blocki, of Chicago, have brought suit in the United States court at Milwaukee against the town of Spring Prairie, Walworth county, Wisconsin, for injuries received in a motor car accident on July 30, 1910. The brothers allege that bad roads were responsible for the accident and they are seeking damages to the amount of $11,500.

Nashville Club Growth—The Nashville Automobile Club now has a paid-up membership of 225, twenty-five applications to be acted on, and it is expected that the membership will grow to two or three times the present number next year. The club is now giving its attention to motor day at the Tennessee state fair which will be on September 19. The exhibit of cars is expected to be the largest ever held in Tennessee. One floor of the largest building on the grounds has been set aside for the exhibit, and space has been taken by a number of agencies. This exhibit will, of course, continue during the entire fair, but on motor day a special program has been arranged. The feature of this program will be the road question, arrangements having been made to have experts from the United States department of agriculture to make talks.



FEATURE OF STREET PARADE AT GRAND RAPIDS, MICH.

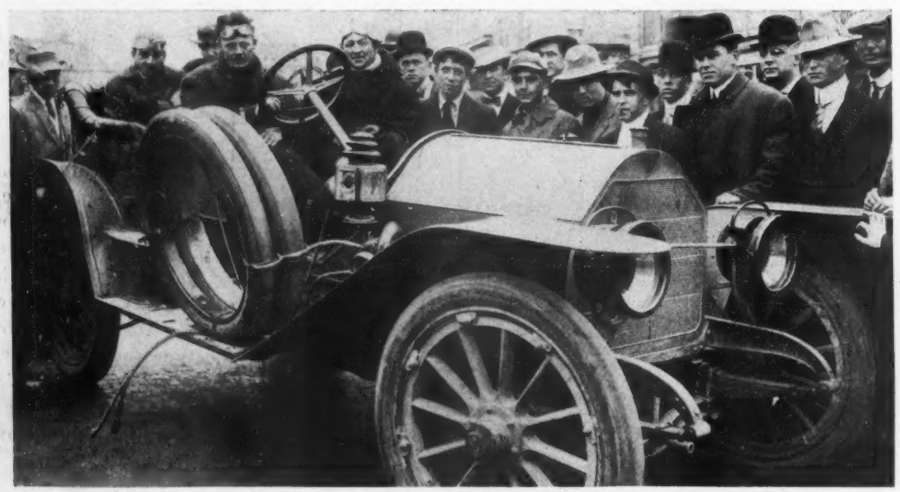
Ohio Files Report—The report of the Ohio motor car department for the 3 months ending August 15 shows that 6,632 cars were registered in that period and sixty-six manufacturers and dealers received licenses. During the same time chauffeurs to the number of 1,227 were licensed. The earnings of the department for the quarter were $36,590.

Deal Off With Oldfield—The negotiations between Barney Oldfield and the Wisconsin state fair board are declared off and the Milwaukee Automobile Club will furnish the motor car to make the 5-mile race with an aeroplane at the state fair, September 13-17. Indications are that the Milwaukee Automobile Club will inaugurate a motor parade on the opening day of the Wisconsin state fair and with this end in view has asked that if possible the new Grand avenue viaduct, one of the largest concrete bridge structures in the world, may be completed for traffic during state fair week. Plans are to have the viaduct used for the first time by the parade.

Harding Will Drive—The United States Motor Company will hereafter be represented in all big racing and endurance events. Hugh N. Harding has been secured to pilot Maxwell, Columbia and Stoddard-Dayton cars. It is the intention of the company to have some of its various divisions represented in all prominent track and road events and a racing team will be maintained which will be in charge of Contest Manager M. C. Reeves.

In Industrial Parade—The American Motor Truck Co., of Lockport, N. Y., took part in a recent industrial parade at Lockport, N. Y., putting in a float mounted on one of its 3-ton truck chassis. The float represented the passing of the horse and perched on the float was an Arabian-bred animal which was given a free ride. Also on the truck were George and Katherine Olmsted, the son and daughter of E. B. Olmsted, general manager of the American Motor Truck Co.

Nashville Will Use Oil—The city of Nashville, beginning September 1, will oil all new streets that are built and all old ones that are repaired, expecting in this way to ultimately get most of the streets of the city oiled, excepting, of course, the uptown paved streets. Rock is abundant at Nashville and all of the streets are well built, but unfortunately the rock is soft limestone, wears rapidly and makes a tremendous amount of fine dust, so much that it is necessary to sprinkle all of the streets of the city daily. The constantly



MICHENER DRIVING SIMPLEX THAT CUT SAN FRANCISCO-DEL MONTE RECORD

wet streets have caused a good deal of trouble from skidding, and it is largely through the influence of car owners that the oiling has been decided on.

City Will Use Signs—The Milwaukee aldermen have decreed that all city motor cars must be marked immediately, fore and aft, with gold letters. The forward letters are to be 2 inches high, and the rear letters will be spread out to 8 inches. The aldermen believed that a marked car will have a depressing effect on the joy-riding tendencies of some of the city officials.

Minneapolis, Minn.—Minneapolis will collect taxes next year on $1,425,300, representing the assessment on motor cars, according to the figures just completed by City Assessor Fort. There are 2,630 machines on the tax lists this year, compared with 1,325 last year. The average valuation also has jumped. Last year was $513; this year it is $542.

Louisville Run Sanctioned—Official sanction No. 241 has been assigned the Louisville American Automobile Club's second annual reliability and economy contest by the American Automobile Association. The run will be held September 20, 21 and 22. The tour this year will cover about 500 miles through the fairest section of the Blue Grass state. Three loving cups are offered this year—one for economy, another for the best reliability score, and the third prize is called the owner's cup.

AMERICAN MOTOR TRUCK IN PARADE AT LOCKPORT, N. Y.

Family Party Tour—A 3-day family party tour to Sturgeon Bay, Wis., and return, on September 3, 4 and 5, has been arranged by the members of the Milwaukee Automobile Club. The distance to Sturgeon Bay is 149 miles and it will be covered on the opening day. The tourists will start at 7 o'clock in the morning from the Hotel Pfister. Sunday will probably be spent traversing the 96 miles of beautiful macadam road to Fish Creek, Ephraim, Egg Harbor and Door County State Park, or in resting at the Cove resort at Sturgeon Bay. It is expected that some of the party will make the return trip by way of Green Bay, Appleton, Neenah, Oshkosh and Fond du Lac, or down the drive along the east shore of Lake Winnebago, and these will have to leave Sturgeon Bay Sunday afternoon in order to reach Green Bay, 56 miles distant, by Sunday night.

Another Truck Test—The Boston American plans to have a contest for commercial vehicles on October 14 and 15 starting from Boston and going to Newburyport the first day by way of Haverhill, Lowell and Lawrence, and the second day returning to Boston through Salem, Lynn, Beverly, Chelsea and Cambridge. It will cover about 130 miles and will be patterned after the Philadelphia North American contest from Philadelphia to Atlantic City recently. The machines will be divided into four classes of from 1,000 pounds to anything over 3 tons, gasoline or electric. Officials of the Bay States A. A. will conduct it.

Parade at Grand Rapids, Mich.—Motor cars played more than a prominent part in the big sixtieth anniversary celebration held in Grand Rapids, Mich., August 22 to 27. They were a part of every parade, of which three giant ones were held. One of the most peculiar floats in an advertising way was that of the El Portana cigar. On the tonneau of the machine was a huge cigar box, on top of which was a huge papier mache man's head. From the mouth protruded a huge papier mache cigar. By means of a mechanical arrangement the head was made to emit smoke from the mouth. Another striking float was that of Smith & Sponsler, a local real estate firm. A huge duck, made from paper flowers, was built upon the machine. Inside the duck's back sat the members of the firm, while behind them sat a boy driving the duck with ribbons. The duck was made to open and close its mouth mechanically.

Atlanta's Next Meet—J. M. Nye, assistant secretary of the Atlanta Automobile Association, will have the entry blanks out for the fall meet of November 3, 4 and 5 in a few days and will then begin an active campaign for entries, the opening gun of which will be fired at Indianapolis. To keep things lively it may be that there will be a local meet put on for September 21. There will be a national convention of Odd Fellows in progress at that time and 30,000 visitors will be in the city. An attempt will be made to get Robertson and de Palma, and the program will be filled with local races.

Driver Is Suspended—For the first time since the new Swann motor vehicle law has been in effect in Maryland suspending the license of a chauffeur for using the machine of his owner without the owner's consent has been put into effect by Commissioner of Motor Vehicles John E. George. He suspended the license of Frank T. Trainor, who was accused of using the machine of Mr. Myer Hess, by whom, until recently, he was employed. The case against Trainor was prosecuted by Attorney Osborne I. Yellott, counsel for the Automobile Club of Maryland, and who also represented Mr. Hess.

Another Cup for Kingsley—Chairman S. M. Butler, of the contest board of the American Automobile Association, has received final advices from the various officials who were connected with the Worcester hill-climb on June 7, and they all voted to give the Thomas Flyer, driven by J. J. Kingsley, first place in event 18, free-for-all gasoline stock cars, disqualifying the Alco, driven by Grant. Kingsley in the Thomas ran second to Grant driving the Alco, but he had his car completely equipped, while Grant stripped his down to the chassis. This gives Mr. Kingsley three first places out of three starts at the Worcester meet.

Will Help Tourists—One of the most important features planned by the Wisconsin State Automobile Association and which will come up for consideration at the annual meeting of the organization to be held in Milwaukee, September 14, is the creating of a touring information committee. It is planned to make the secretary of each club in the association a member of this committee, in addition to five members appointed at large. This committee will get data together on the various roads in the state.

Truck Saves Time—To prove that garden produce may be brought to market without being crushed or damaged, Arthur W. Cobb, Boston agent for the Johnson car, took 2 tons of vegetables from Littleton, Mass., to Boston a few days ago in 3 hours, passing on the way a number of other teams hauled by horses that had started several hours previously. A lot of eggs also was taken along and when the trip ended there was no evidence of any damage to anything. It was estimated that 8 hours were saved by using the motor truck. This was the first time any such produce was ever brought to the Boston markets in a motor vehicle.

BRISCOE GETS FACTS

TARRYTOWN, N. Y.—Editor Motor Age—For the purpose of arriving at the true facts and obtaining exact information relative to the rumors which have been so persistently circulated by some bankers, that motor cars were purchased by the wholesale with money secured by mortgaging homes, I wrote to 24,000 bankers in the United States and enclosed a blank form asking the bankers to furnish me with the number of people in their vicinity who had mortgaged homes or who had borrowed money to purchase motor cars. I also asked the bankers to supply me to the best of their knowledge with the percentage of motor cars used for business or useful purposes and whether or not in the bankers' opinion the sale of cars would increase in their respective territory.

Replies have been received to date from 4,830 bankers who state that there are 198,216 cars in their cities and towns. Of this number only 1,254 have been purchased by the placing of mortgages and only 7,475 have borrowed money without mortgage to purchase them. In the opinion of 3,229 bankers, the sale of cars will increase during 1911 over that of 1910, while 1,601 say the sales will not increase. The latter, however, are bankers in the small towns and remote sections of the country where the increase in population is small, which may account for their opinion in part.

With less than 1 per cent of motor cars bought on mortgages and less than 4 per cent purchased with borrowed money, recent claims of alarmists are conclusively proved to be practically without any foundation whatever. These figures show the motor car business to be built upon as sound a foundation as that of any other industry.

Many of the letters are filled with optimistic statements and there is probably no class of business men in the country who are in a better position to throw light on the future of the motor car industry and in fact any business, than the bankers. These letters reveal the exact conditions in all sections of the country and it is with considerable gratification that a big percentage of the letters speak in glowing terms of the various business purposes to which the car is applied.

It is surprisng that so many so-called pleasure cars are used by physicians, contractors, real estate dealers, farmers, the bankers themselves and other business men. Reports show that hundreds of the bankers own cars and they do not hesitate to say that they consider them helpful not only in the ways of recreation, but in business as well.

Many of the letters deal upon the usefulness of the car for farmers. The car has brought the farming sections closer to the cities and is making the boys contented with farm life. It is keeping many of the farmers' sons on the farm instead of leaving the farm for city life. The farmer can go to town with a load in a short time and get back and do a day's work. In the evening they use the car in taking their families to lectures, concerts or the theater and get home in time for a good night's sleep. It is the belief of many of the bankers in the rural sections that the car makes agricultural life worth living.

"We have no sympathy with talk that has been given out in New York circles as to the extravagance of a large proportion of motor car purchasers as to their duty to save their money, or at any rate, avoid the purchase of machines," says the president of one of the biggest banking houses in Chicago. "We believe if the same number of city and country folk had actually mortgaged their properties, as is alleged, and with the proceeds had bought securities which Wall street has, that no suspicion of complaint would have been heard.

"It is, however, not at all a question of whether an investor buys a car or not, but simply a question of what becomes of the money after that, viz.: whether it is put into enlarging the motor car plant or whether it is distributed to the stockholders, and by them invested in securities."

From Canton, Ill., comes the statement from an official of one of the largest banks who says: "I have studied the matter over rather carefully and have concluded that the motor car is a coming necessity rather than a luxury. I realize the prejudices that exist against the purchase and use of them in general, and feel that it is only natural among some of the more conservative persons, but believe that they will be compelled to get over that feeling, as the motor car will within a few years entirely displace the horse-drawn vehicle for road travel."

"We have never yet known of a resident of Hood River or Hood River valley placing a mortgage upon his home to buy a car, although there are many who have mortgages upon their homes that do not own cars," is the statement from the president of a bank in Oregon.

From the thrifty state of Iowa, the following is received from the cashier of a large bank. "We think that the machines owned here are used 50 per cent of the time for business. As a matter of fact, it has been the means of bringing the country into very close touch with the town and our farmers are now buying machines quite largely. From the number of farmers who come personally to the writer and ask if he thinks they would be capable of running a car, he thinks that the year 1911 will double the sales of 1910. As far as Iowa is concerned the farmers are just waking up to the possibilities of the car, and if you have ever had any experience with this class of trade, you will note that when one farmer in a neighborhood gets a thing, it is only a matter of a short time before the whole bunch have it."

A predominating feature of the correspondence reveals the frankness and thoroughness with which the bankers made the investigation. Many of them personally talked with motor car dealers and garage men, present and prospective owners of cars and the compilation shows vividly that these hard-headed business men believe the car industry is practically in its infancy and that the public is only awakening to the great possibilities of the motor car.—Benjamin Briscoe.

VIEWS OF H. O. SMITH

Indianapolis, Ind.—Editor Motor Age—The spirit of the age is to keep abreast with the march of progress, and it would be difficult to conceive of even a banker refusing to make a loan on a respectable business merely on the ground that some portion of this money might be exchanged for an article which has astonished the world on account of the practical way in which it has effected a marked saving of time, being the equivalent of reducing distance. It is perfectly true, perhaps, that men have been known to mortgage their homes or to borrow on life insurance policies to buy machines, and as an indication of reckless extravagance and shiftless foolishness such a performance is to be deprecated, but there is no logic in blaming the motor car maker or denouncing his business as the cause of a silly act. As a matter of fact, there is less of this going on than some critics would have the public believe. A farm located an hour from the market reckoned on the basis of horse travel can be brought one-third nearer in effect by the saving in a practical way of two-thirds of the time necessary to travel the distance, and why should the privilege be refused, or the farmer censured for employing a modern agent of economy any more than for the use of a modern self-binder in the harvesting of his grain? To go further, the farmer is not criticized if he places a mortgage on his farm in order to purchase advanced equipment to carry on his work.

But the danger of people venturing into unwise obligations is largely eliminated by the fact that cars are sold for cash rather than on payments, which means that the purchaser must have a sufficient bank account, or equivalent assets, for settlement, and the temptation to heavily discount the future, as might be the case with cars sold on the installment plan, is entirely eliminated.

Statistics show that there is little cause

Communications

for charging the cost of high living to the motor car, and the most convincing proof can be cited in a comparison of the $350,000,000, representing a total list price of the 175,000 motor cars sold in the last 12 months, and the impressive and enormous amount of $2,500,000,000 expended during the same time for liquor and tobaccos alone.

Unofficial statistics have been obtained which are interesting, for they indicate that a possible 75 per cent of the motor cars purchased are bought by those who have previously owned private conveyances, or are using the former in a commercial or semi-commercial way; it also has been shown that the wealthy almost invariably buy expensive cars and more than one car, and on a fair estimate 85 per cent of the money invested in motor cars is expended by this class. Notwithstanding many contrary reports, it is a fact that the mileage cost of operating motor cars is less than the mileage cost of horse-drawn vehicles, while the mileage depreciation of the motor car is not anywhere near that of the latter. Of course this depreciation does not take into account the whimsical fancies of those buying motor cars annually, and causing a depreciation by making new cars second-hand ones. It is reckoned on the basis of a car capable of 5 or 10 years service and travel of from 50,000 to 100,000 miles, operated as long as it gives good service and is dependable, just as an engine in a power plant is used year after year and is not discarded because of minor defects.

Of all the interesting phases there is one that is of supreme importance, because there are few articles marketed the list price of which represents so great a percentage of labor pay roll as the motor car, which means that a substantial portion of the money expended goes directly to the laboring man and is promptly put into circulation again. If it were possible to do so, and the motor industry were entirely eliminated for a time, we would be amazed to learn of the channels of American industrialism which would suffer and suffer seriously, and I believe that no financier would go on record as being willing to discriminate against an industry which has forced recognition as has this one, and an industry which weathered the storm of the 1907 depression and in reality had a wonderful influence upon the renewal of confidence and the return to normal conditions.

GIVES FACTS AND FIGURES

Indianapolis, Ind.—Editor Motor Age—It is pertinent to point out the future prospects of the motor car industry, and to this end reference is had to the official figures of the United States government. According to the census of manufacturers, in 1900, there were produced in this country 904,639 family and pleasure carriages. In 1905, 937,409 family and pleasure carriages were produced, or an average, for the two periods, of 921,024 annually. These figures do not include the production of privately-made carriages and family and pleasure vehicles made on a small scale by individual makers, repair shops, etc., which, in the aggregate, would amount to a considerable number. It is safe to say that for the 10 years, 1900 to 1910, the average production of horse-drawn vehicles of the family and pleasure type would amount to 900,000 annually. The average life of vehicles of this type, estimated conservatively long, is 10 years. This would mean that there were in actual use, at any stated period within the interval, at least 9,000,000 family and pleasure vehicles. With the exceptions incident to any line of business, every owner of a horse-drawn vehicle of the cheapest and simplest type, will be an ultimate buyer of a motor-driven vehicle. Even if the motor vehicle may cost more than the horse-drawn vehicle, as indicated above, the increased efficiency, in the way of health and activity of the owner of the motor-driven vehicle, will more than offset the increase in cost of the motor vehicle. In this connection, upon proper investigation, it will be found that the increase in cost of the motor vehicle disappears, or is not so great as it was thought to be. In the first place, one motor car of the modern type will take the place of three horse-drawn vehicles of the family and pleasure type. When the cost of three horse-drawn vehicles, plus the price of the horses, harness and trappings, is placed against the cost of the motor car, it will be found that the motor car is not such an extravagance as it was supposed to be.

Granting the same statement that one motor car will displace three horse-drawn vehicles of the family and pleasure type, it will require approximately 300,000 motor cars annually to supply just the normal demand, without taking into consideration the abnormal demand incident to substituting motor vehicles in place of the 9,000,000 horse-drawn family and pleasure vehicles in use. To show how little this abnormal demand has been supplied, it is only necessary to say that on the first of January, 1910, there were approximately 300,000 motor cars, all told, in use.

The figures and comparisons given above do not refer to, or touch upon, the vast field of vehicles designed principally for transporting goods, which the government classes under the heading of "Wagons: for busines, farm, government and municipal purposes." Within this category is to be found the familiar dray and delivery wagon, both of which are almost immediately susceptible to being displaced by motor trucks. Of the various types of wagons, there were produced in 1900 570,428; in 1905 there were produced 643,755, or an average, for the two intervals, of 607,091. A conservative estimate of the life of this class of vehicles is 10 years, which would indicate in use at any given time within the period named a total of over 6,000,000 wagons. The number of motor trucks which has been manufactured to date, towards supplanting this number of wagons, is comparatively infinitesimal. After the abnormal demand for motor trucks is satisfied, it will require not fewer than 100,000 motor trucks annually to supply the normal demand incident to increase in population and wearing out of old vehicles.

In the face of this, can any sane person longer have any doubt as to the economic soundness of the motor vehicle industry? The fact that some motor car manufacturers may fail, owing to lack of good business management or failure of product to make good is not the slightest indication of any unsoundness of the industry in general.—C. C. Hanch, Nordyke & Marmon Co.

JEWEL COMPANY AFFAIRS

Carthage, O.—Editor Motor Age—There appeared in the press a few weeks ago a notice that we had gone into the hands of receivers, and possibly it may be of great interest to some of Motor Age's readers to know the condition of affairs at the present time. We were forced to go into the hands of receivers not on account of lack of assets, but because early in the season when we should have had material it was impossible for the supply people to furnish the parts. Materials which were ordered for last September, October, November and December were not received until January. We found it impossible to get out our demonstrating cars on time, and when they were finally received by the agents, bad weather came on, which rendered it difficult for them to make demonstrations and to secure early orders. This prevented them from selling the number of cars for which they had contracted. In the meantime stock began to be received by us. Some of it that was due in October, November and December being received as late as May and June. This left us at the end of the season with a large stock on hand and a general slump in the business, causing trade to fall off to a considerable extent. Finding that it was going to be difficult to meet pressing engagements as they matured on account of excessive stock, we deemed it advisable to place our affairs in the hands of receivers temporarily. Arrangements, however, are now being made to increase our capital stock, and within a very short time the receivership will be raised and the business will be resumed. Our capital stock will be increased from $250,000 to $400,000. C. F. Pratt, the Jewel Carriage Co.

The Realm of the Commercial Car

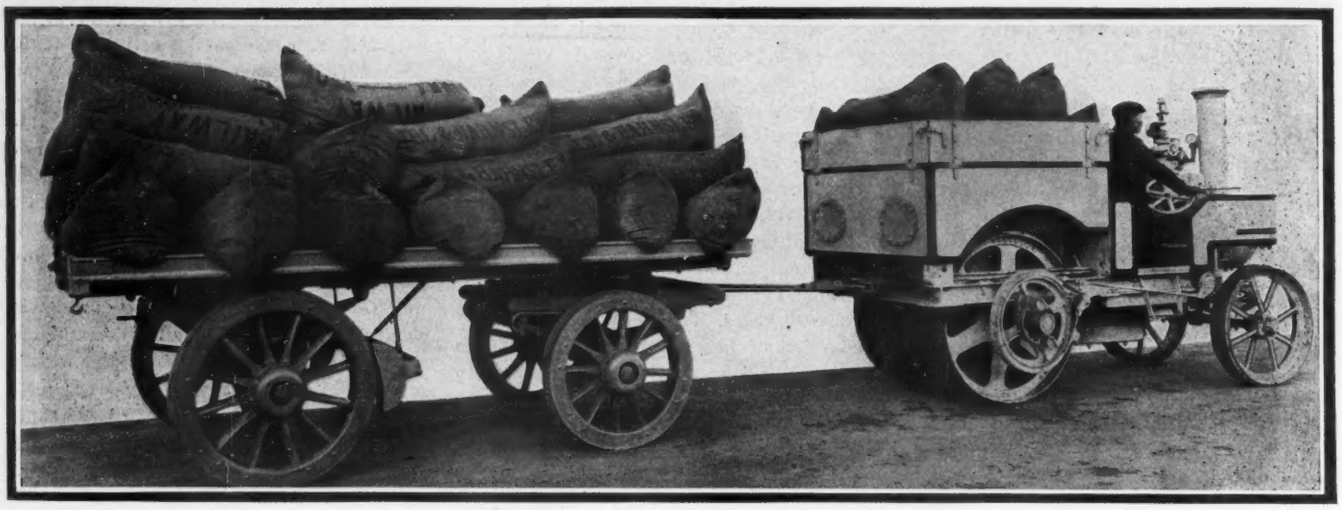


FIG. 1—ENGLISH TRACTOR USED FOR DRAG WORK ON ROAD

NEW ENGLISH TRACTOR

A NOVEL English tractor intended primarily for agriculturel service, is shown in Fig. 1, being utilized to advantage for hauling grain and other material by means of a trailer. The motor can be used for plowing on the farm, driving a threshing machine and doing other agricultural work. The principal point of difference between this and an ordinary steam tractor is that instead of the rear wheels coming outside the horn plates or frame members, it is provided with two extra wide roller wheels which come between them. The advantage of this is that the weight of the engine is distributed over a great width of ground, and the rear wheels do not travel over land which has already been run over by the front wheels. The boiler is of the ordinary locomotive type, and similar to those used on other English steam carts and wagons of the Mann type being fired from the side. The engine is a compound type mounted on top of the boiler, and will develop about 20-brake horsepower. It is provided with a flywheel and governor to regulate the speed. The water tank is mounted directly over the rear wheels, and is an extra large one, so that the engine will travel for a long distance without it being necessary to refill it. A winding drum or wince is also provided, which will pay the rope out while the engine is traveling forward. It is mounted in a convenient position on the right side of the engine. Topboards can be fitted above the tank, thus forming a receptacle for carrying spare fuel, tools, etc., or for carrying part of the load when the machine is engaged on ordinary haulage work. In Europe this type of vehicle is attracting more than general attention, because of the adaptability to so many varieties of work—on the farm and the road.

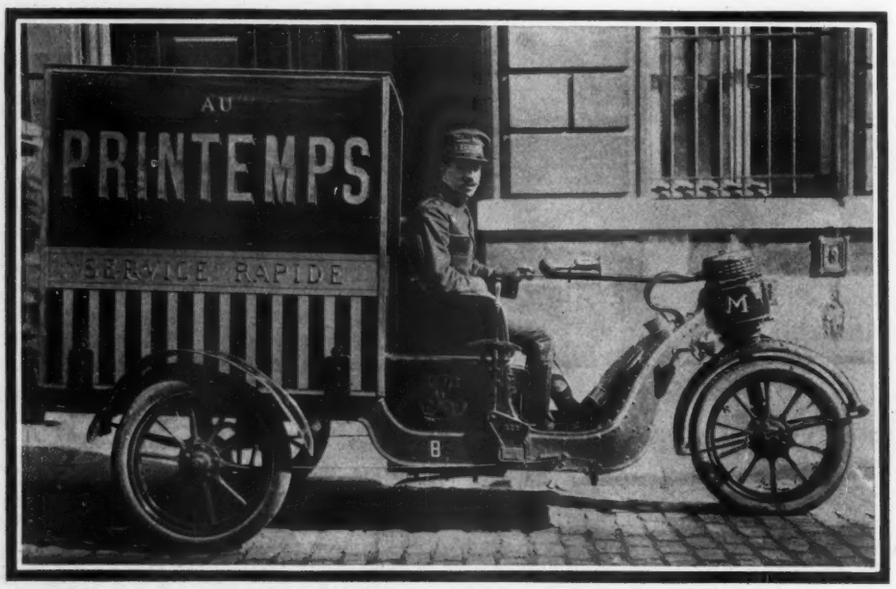


FIG. 2—THE NEW PARISIAN THREE-WHEEL DELIVERY CAR

THREE-WHEEL DELIVERY VAN

A novel type of electric delivery van, designed for quick service in the crowded quarters of Paris, has recently been adopted by the large Printemps department stores. The weight-carrying capacity is low, it rarely being necessary to load the vehicles to their maximum of 400 pounds. Maximum speed need not be high, for it is impossible under crowded city conditions to let any vehicle out, except on very rare occasions, at more than 12 miles an hour. A fairly high average must be obtained by the ability of the vehicle to worm its way through traffic that would cause a stoppage of large wagons. The fastest travelers over the most crowded Paris streets are newspaper cyclists, who slip ahead where 60-horsepower cars have to remain motionless. Speed in traffic embodies simplicity of control, which is fully secured in the Printemps electrics.

The little vehicles are three-wheelers, with the front wheel used for both driving and steering. The chassis frame, which is of the pressed steel type with a considerable drop for the portion reserved to the driver, has its two sections swept upward and inward until they join at the front. It is at this point that the electric motor M, Fig. 2, is carried, with its drive taken to the front wheel through encased gearing ,a vertical propellershaft S, Fig. 3, with universal plunger joint at its base, and a bevel gear within the housing G meshing with the crown bevel on the front wheel hub and within the housing G1. The wheel is carried between two parallel transverse bars B with their extremities attached to the ends of the reinforced steel

mud guards A. There are neither forks nor springs.

The motor obtains its current from a set of storage batteries composed of twenty elements of 3 volts each carried beneath the driver's seat. This, together with the drop frame, brings the center of gravity very low. Steering is done by means of a tiller T operating on the vertical pillar. The wheel being of the castor type, it is possible for the vehicles to turn with ease in their own length. Control of the motor is by means of a side lever, which allows of the full range of speed ahead and reversing the motor. A footbrake operates on the rear wheel drums. All wheels are shod with 27.5 by 2.9-inch pneumatic tires, the front one being steel studded and the rear ones smooth.

On one charge the vehicles have a range of action of 60 miles at a speed of 12 miles an hour. In practice it is found that they are not driven more than 40 miles a day. The body dimensions are 48 inches in length, 33 inches wide, and 35 inches high.

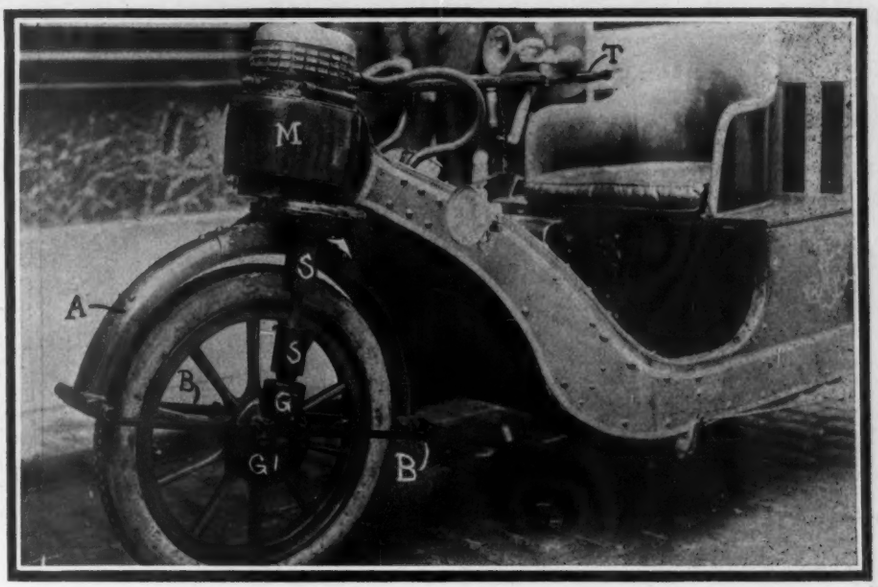


FIG. 3—MOTOR SUSPENSION IN FRENCH DELIVERY CAR

CONVERTS TWO SKEPTICS

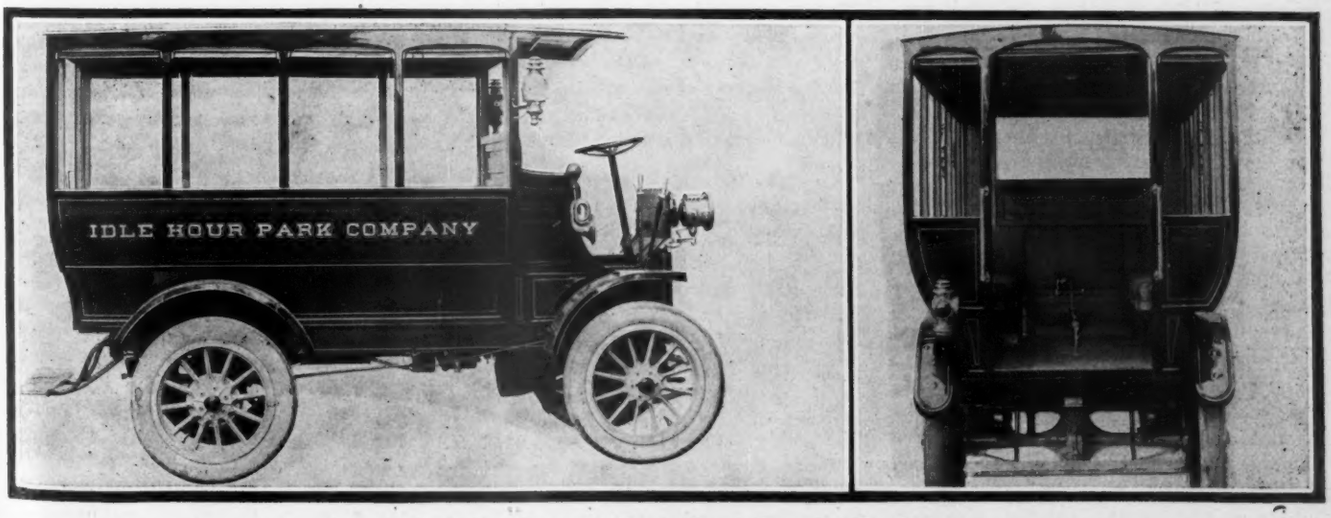
Demonstrating conclusively the superiority of the motor-drawn truck over the horse-drawn truck on short hauls, W. H. Barnes, of Seattle, recently conducted an experiment. A 1-ton Rapid truck delivered goods for Williams & Meise, in charge of the family trade department in Seattle for the Olympia Brewing Co. Williams & Meise just prior to the test declared they wouldn't take a motor truck as a gift. At the end of the trial they immediately placed an order for a Rapid. The test was made with a machine which Barnes had had in active service for 3 years. It took the place for 1 day of a team hauling from the bottling works to the homes about the city, covering, according to the speedometer, a total distance of 17.8 miles and making twenty-nine deliveries. The custom has been for the team to start out on the route at 7 a. m., but the truck on this trial did not leave the bottling works until 8:40. The team usually finished the run at 9 or 10 o'clock at night, but the Rapid was through at 3:36 p. m., having covered every bit of the distance and made every delivery. The total time consumed was 6 hours 54 minutes, including the time utilized for stops and for lunch. Accurate tab was kept on every minute and it was found that 4 hours 26 minutes were required for the stops and lunch, leaving 2 hours 28 minutes as the time actually consumed in running between stops. The expense for the day was found to be 72 cents for gasoline, 4 gallons, and 30 cents for 3 pints of lubricating oil.

NEW FRANKLIN BUS

The H. H. Franklin Mfg. Co., Syracuse, N. Y., has fitted a combination bus body to its model G 18-horsepower chassis, making a suitable vehicle for hotel work. The bus is of standard size, having an inside measurement of 65½ inches, a seat length on each side of 7 feet, and a seat depth of 14 inches, providing comfortably for twelve persons inside. There is a 2-foot aisle between the seats, and the entrance is from the rear. This company has also fitted what might be described as a combination baggage and passenger vehicle. This is a body similar to the one referred to, but with window frames without the windows. These window openings are provided with curtains. When necessary the seats may be folded back, giving a free floor space for carrying trunks and baggage at which time the bus serves as an express wagon. The bus is fitted with semi-elliptic springs in the rear, and 36 by 5½-inch tires are used.

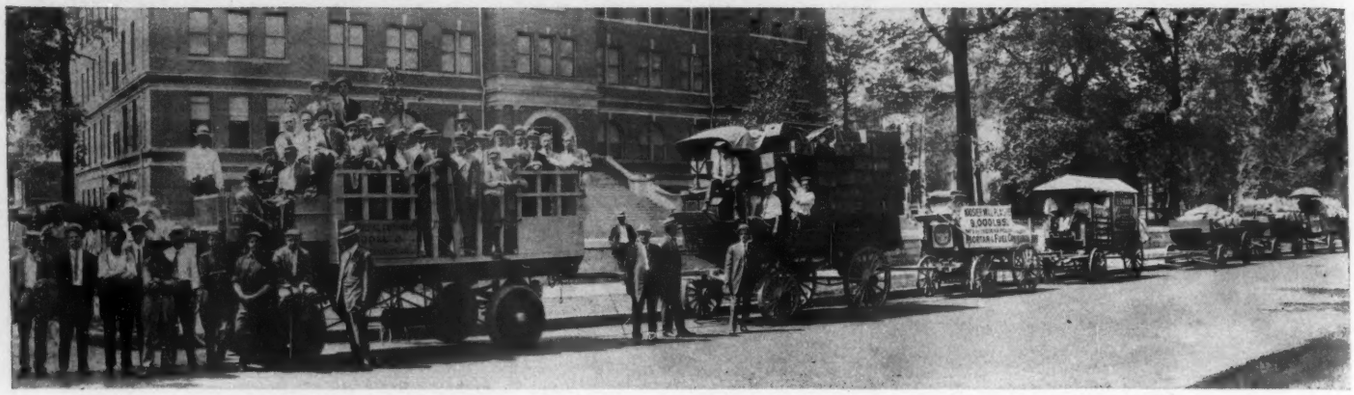
NEW BRODESSER PLANT

Plans have been completed for the new factory to be erected at Juneau, Wis., by the Brodesser Motor Truck Co., which has been building the Brodesser truck at Milwaukee for several years. The main building will have dimension of 200 by 60 feet, of solid brick, with concrete floors. Twenty-four feet of the building will have two stories, the upper floor being for office and administration purposes. The power plant will occupy a separate building, situated between the main plant and a large warehouse. The Chicago and Northwestern railway is now building a spur track from the main line into the warehouse. The plant will be ready December 15.



FIGS. 4 AND 5—THE FRANKLIN HOTEL BUS IN SIDE AND END VIEWS

Among the Makers and Dealers



UNIVERSAL MOTOR TRUCK PULLING A LOAD OF 49½ TONS IN RECENT INDIANAPOLIS DEMONSTRATION

PIERCE Made Manager—The Regal Motor Car Co. is opening a branch in Cleveland at 1926 Euclid avenue, which is in charge of Frank L. Pierce, for 7 years sales manager of the Gaeth Motor Car Co.

Diamond Company Growing—Word comes from Akron, O., to the effect that the Diamond Rubber Co. has purchased a tract of 132 acres on the west side of Main street to give room for extensions and additions. The purchase price of the land was $30,000.

New Truck Company—The Lisbon Auto Truck Co. has been formed with a capital of $50,000 and will build a plant at Lisbon, O., at once for the manufacture of small motor trucks for the use of grocers, hucksters, etc. Among those most largely interested are A. H. Wyatt and W. A. Kitto, of Cleveland, O.

Warren Back with Haynes—C. B. Warren has returned to the Haynes Automobile Co., of Kokomo, Ind., and resumes his old position of sales manager. Warren left the Haynes company in 1908 to represent the Stearns company on the Pacific coast, and later went into the retail business in St. Paul, Minn., with Burney Bird, who represents the Haynes in the Twin Cities. Warren disposed of his interest in the Burney Bird company recently and accepted his old position with the Haynes company.

New Amplex Deal—T. C. Starrett and H. N. Hovey, of Detroit, Mich., have purchased the interest of Adolph Kamm, Rudolph Knorr and Martin Schaefer in the Simplex Motor Car Co., of Mishawaka, and will give the business their personal attention as soon as the inventory, which is now being taken, is completed. The new management expects to operate the plant to its fullest capacity and will have the new 1911 model ready in a short time. LeRoy F. Maurer, who has been chief engineer of the concern, has ben placed in charge of the enginering department. The complete force of 350 men has been returned to work and the number will be increased as fast as room is arranged for at the plant.

New Hudson Department—The Hudson Motor Car Co. announces the establishing of a new merchandising department. The Hudson merchandising department tells agents how to get in touch with the consumers, how to interest them and how to close a sale.

Plan a Big Plant—Plans and specifications have been completed for the large plant to be erected at Gallion, O., by the Howard Auto Car Co., recently organized at that place. The plans call for three large buildings of steel and reinforced concrete construction. One of the buildings will be one story in height. In addition there will be erected a power-house with large engines.

Miniter with Vortex—N. H. Miniter, formerly general factory representative of the Schebler carbureter and for the past year sales manager of the Eisemann Magneto Co., has been appointed sales manager of the Reichenbach Laboratories Co., manufacturer of the new carbureter, known as the Vortex vaporizer. Mr. Miniter will make his headquarters at the home office of the company, 2420 Michigan avenue, Chicago.

Firestone Board Retained—At the annual meeting of the Firestone Tire and Rubber Co., held in Akron, August 24, the former board of directors was retained and the following officers were re-elected for the coming year: H. S. Firestone, president and general manager, Will Christy, vice-president; S. G. Carkhuff, secretary, and J. G. Robertson, treasurer. The yearly gain in sales was reported and it was announced that the new model tire plant now in process of construction will be completed and in full operation by February, increasing the manufacturing capacity four-fold. R. J. Firestone, sales manager reported a big demand for quick-detachable demountable rims from all portions of the country.

Buy De Tamble Business—L. Zinke and E. Wiener announce they have purchased the De Tamble Motors Co., of Anderson, Ind. E. S. De Tamble, who was president of the company, has signed a 10-year contract as distributer for all territory west of Denver, with branch offices in Seattle and Portland.

Joins Vortex Forces—C. S. Gibson, heretofore manager of the Stromberg Motor Devices Co.'s eastern branch, has resigned to accept the eastern distributorship for Vortex vaporizers, the new carbureter being marketed by the Reichenbach Laboratories Co., of Chicago. Mr. Gibson's headquarters will be in New York city.

Big Stewart Sign—The Stewart & Clark Mfg. Co., of Chicago, maker of the Stewart speedometer, has just erected over its New York salesrooms at 1878 Broadway, the Motor Mart, a very large electric sign—in fact, one of the largest of its kind in New York—which can be seen a long way down Broadway. The word "Stewart" is outlined in the style of the trade-mark in ruby lamps, so as to contrast with the white lights used in the word "Speedometer."

Will Make Parts—The Collins Gear and Motor Co. has purchased the plant of the Simpson Stove and Mfg. Co., at Canonsburg, Pa., which has not been operated for several years, and will convert it into a factory for the manufacture of axles, gears and motors. In addition the company will erect a building 60 by 300 feet and will have the entire plant running by December 1. The officers are: J. J. Flannery, president; D. P. Collins, vice-president and manager; J. M. Flannery, secretary, and H. A. Neeb, treasurer, all of Pittsburg.

The capital of the concern is $250,000. It will employ about 150 men at the start, and promises to double the number within 6 or 8 months.

Minneapolis Headquarters—Minneapolis has been selected by the Franklin company, of Syracuse, N. Y., as headquarters for its northwestern traveling representative. George S. Rule has charge of Minnesota, North and South Dakota, Wisconsin and northern Michigan and will work out of the Robertson Motor Co.'s office at 111 Tenth street south.

Regal Method of Testing—The Regal Motor Car Co., in connection with its factory in Detroit, has converted a large plot of land into a testing track. This circular path is ⅓-mile in circumference and circles what is known as the testing house, a modern-constructed, well-lighted building wherein is carried on complete tests of the machines in stationary form.

Building Marathons—By the middle of September the Southern Motor Works will be turning out Marathon cars from its Nashville plant at the rate of five per day. About seventy-five men are employed, but the force is to be rapidly augmented at once until it reaches 400. The plant is located in a big brick structure that was formerly a cotton factory. The plant formerly was located at Jackson, Tenn., but was removed to Nashville, the capital largely increased and operations greatly enlarged. Only two models were turned out at Jackson, but the Nashville factory will begin with four.

Premier Men Meet—Gathered from all parts of the country to discuss the cars which will be offered by the Premier Motor Mfg. Co. for the season of 1911, the distributors of Premier motor cars have just concluded their second annual convention at Indianapolis. A comprehensive program had been mapped out by the factory officials, including inspection of the 1911 models, lectures on the construction, on the sales and advertising situations, and on the prospects for the season, in addition to numerous social functions. Deliveries of the new models will commence shortly and the details of the distribution were thoroughly taken up during the week. One of the pleasant features of the week was the presentation of several handsome rewards to men in the Premier organization who have distinguished themselves in contests and in the factory. They are Ray F. McNamara, Clifford Waltman and Charles L. Ballinger. To McNamara and Waltman were given solid gold watches, and to Ballinger a diamond lion's head ring, in recognition of their meritorious services.

BRANCH OF CONTINENTAL CAOUTCHOUC CO. OF KANSAS CITY, MO.

McCord Marion Sales Manager—Don C. McCord has taken the position as sales manager for the Marion cars, with office in factory No. 3 of the Willys-Overland company, located at Indianapolis. This brings about a change in the management of the sales of this car, which was formerly cared for by the regular Overland force. McCord was for some time the Overland factory representative on the Pacific coast.

After Twombly System—W. S. Drummond, the organizer and former president of the New York Transportation Co., of New York, who is now engaged in the banking business in London and Paris, is in this country negotiating for the French rights to the Twombly system and quick removable power plant. Mr. Drummond represents one of the largest manufacturers of cars in France, who is anxious to secure the French patents on the Twombly system, so that he can incorporate the quick detachable power plant to the vehicles he now produces. The terms have practically been agreed upon and the final details will probably be closed this week, it is anticipated.

May Make Cars—Cecil E. Gibson, general manager and treasurer of the Gibson Automobile Co.; William R. Wheeler, vice-president and manager of the Reliable Auto Exchange, and Ira M. Holmes, an attorney, have organized the Cecil E. Gibson Motor Car Co., in Indianapolis. The company has also been incorporated with an authorized capital of $25,000. It is understood the company expects to engage in the manufacturing business, although it has not made its plans public.

Mitchell Growth—The Mitchell-Lewis Motor Co. states that during the year 1909 it delivered 2,946 cars, valued at $3,440,468.94. For 1910, up to September 1, it will manufacture and sell 5,200 cars, representing something over $6,000,000, or double the business of 1909. It has planned for the 1911 season to manufacture 8,000 cars. This quantity has already been taken by its agents and it is claimed the output of 8,000 cars does not come within 30 per cent of giving its agents the actual number of machines they insist upon having for 1911.

NEW GARAGE OF PAXTON-MITCHELL CO. IN OMAHA

Joke on Will H. Brown—Employes of the Overland Automobile Co., Indianapolis, turned a clever trick on Will H. Brown, vice-president of the company, a few days ago when they had him taken to police headquarters on charges of violating the speed laws and throwing dust in a policeman's eye. At the police station it was explained the arrest was a joke and Mr. Brown returned to the factory to find all of the employes gathered in the final assembling department. He was presented with a Mystic Tie pin and a camera, and informed that these were tokens of friendship on the occasion of the anniversary of his birth.

The Motor Car Repair Shop

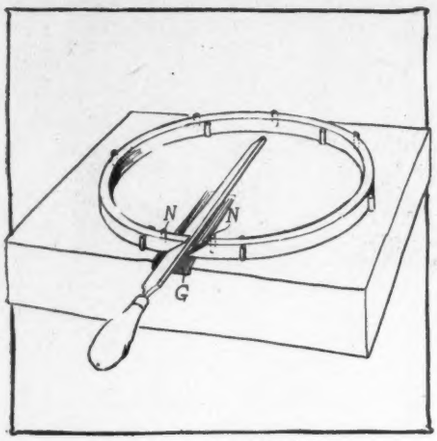


FIG. 1—MEANS OF HOLDING PISTON RING

About Fitting Piston Rings

LIKE all other mechanical operations, the fitting of piston rings is comparatively simple—if you know how; but many are sprung and some are broken. Most manufacturers now cut the grooves in the piston, and grind the face and edges of the rings to a gauge, making very little hand-fitting necessary. But there are cases, and these are the ones that generally come into the repair shop, where the cut was just a trifle larger, or the ring a little smaller than the gauge, making it essential that each ring be individually fitted to the groove in which it shall subsequently rest.

To properly dress down a ring requires some skill, and a good mechanic will select a ring which will demand the least amount of trimming, for it is a delicate operation. After having selected a set of rings the first operation is to fit them into the cylinder. Taking one of the rings, try very carefully to shove it straight in, concentric with the cylinder walls; if the ring is of the diagonal-slot type and its diameter a little large, the ends will run upon each other, throwing the edges out of line; while if a ring with square-cut overlapping ends is used, it will not go in at all. Therefore, the ends must be trimmed off so that when the ring is well up into the cylinder there will be a space of about eight to fifteen-thousandths of an inch between the ends, to allow for expansion caused by the heat of the motor. The groove G on the block shown in Fig. 1 is used in reducing the size of the diameter of diagonally-slotted rings. A thin, smooth, flat file is best used for this purpose and it should be placed between the ends of the ring with its bottom edge in the groove G. The ring must then be pressed together so that its ends bear against the surfaces of the file as it is moved forward. The ring should be repeatedly tried in the cylinder in order that the space is not filed to exceed the above dimensions. The inside portions of the rings near the ends should rest against the nails N, in order that they may not be broken off when filing the slot. Having attained the proper space between the ends of the ring, now place a light in the cylinder behind it and see how its face conforms to the wall of the cylinder. If there is good contact all around, the ring is ready to be fitted to the piston; but if the contact is poor, either the ring or the cylinder is out of round, leaving space between cylinder wall and the ring as at C and P in Fig. 2. If the fault lies in the ring the face can probably be dressed down to fit, or another selected; but if the cylinder is badly out of round it will have to be rebored or reground, or both, as the case may be, or replaced with a new cylinder. When the rings have been adapted to the cylinder, the next operation is to fit them in their respective grooves on the piston. Begin with the ring selected for the bottom groove, as that ring will be the first to be slipped on to the piston. First try the ring without slipping it over the piston by inserting it in the groove and rolling it around its circumference. It should fit snugly as at A, Fig. 2, but still be free to slide in and out easily; if it binds in any place, apply a thin film of red or black lead or prussian blue in the same manner as used in scraping bearings, to locate the high places, then dress down with the thick, smooth, flat file and try again. When filing is necessary, it should be confined to one edge in order that at least one good edge is retained, for it is almost impossible to secure as regular a surface with a file as that made by a grinding machine. An example of ill-fitting rings is shown at B, Fig. 2; and at the right in Fig. 2 the space C shows that the ring was sprung in putting it on the piston.

FIG. 3—MEANS OF SLIPPING RINGS ON PISTON

A very simple and effective means of holding a ring for fitting is shown in Fig. 1; the ring is placed on a block of wood and a few small nails driven into the block both inside and outside of the ring in such a manner that the ring is held securely in place for filing. The heads of the nails are then cut off, the ring removed, and the nails filed down so that they will extend just below the top surface of the ring when it is replaced on the block. With the nails well placed, there will be no danger whatever of breaking the ring when filing. Having fitted one ring, put it in place immediately and repeat the operations with the next ring. A quick and safe method of slipping rings into their grooves is shown in Fig. 3. Take three strips of sheet metal, brass or tin, for instance, about $\frac{1}{32}$ inch thick, ½ inch wide and 5 inches long; bend these at right angles and hang them on the edge of the piston at equal distances apart. The ring may then be slipped over these till it is opposite its groove, when the strips may be removed and the ring allowed to slide into place. The same strips may also be successfully used in removing rings.

Emery cloth should not be used in this work, as cast iron is very porous. Grains of emery which will remain in the pores, work out later on and cause much damage.

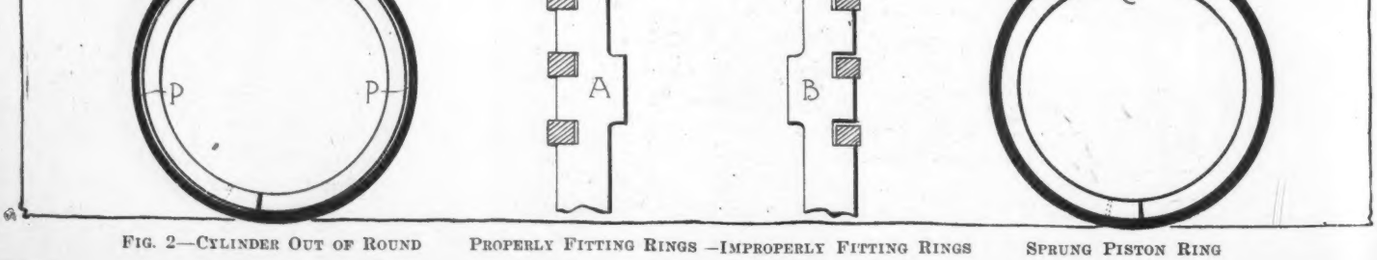


FIG. 2—CYLINDER OUT OF ROUND PROPERLY FITTING RINGS —IMPROPERLY FITTING RINGS SPRUNG PISTON RING

Current Motor Car Patents

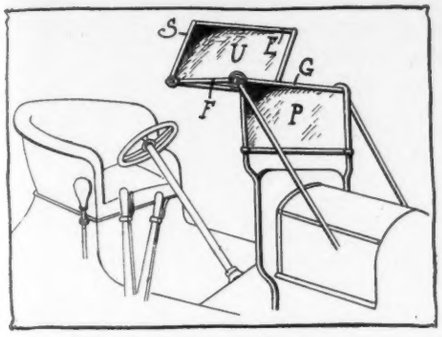


FIG. 1—IMPROVED WINDSHIELD

Spring Locking Washer—No. 966,973, dated August 9; to Sydney William Wilkinson and Walter Gregory, Hathersage, near Sheffield, and Edward Cottrell Jenkins and Robert Jenkins, Birkenhead, England—This patent relates to a spring lock-washer which, as shown in Fig. 5, is not greatly unlike the split-spring washers now in common use, the only difference, perhaps, being that it has two coils instead of one. It is formed from a strip of ribbon steel coiled helically and having a kink on the inner marginal portion which vanishes at the outer periphery.

Method of Making Spark-Plugs—No. 966,784, dated August 9; to James C. Anderson, Washington, D. C.—This patent relates to a method of manufacturing spark plugs which as arranged in Fig. 2 consists in heating the shell S and confining it within a mold M, locating a heated electrode E within the shell and supporting it in fixed relations therewith, flowing molten glass between the shell and the electrode, and finally subjecting the body of molten glass to pressure whereby it is welded to the metallic members of the plug.

Improved Windshield—No. 966,785, dated August 9; to Frank W. Aurig, Philadelphia, Pa.—This patent covers a type of windshield which is remarkable for the wide range of convenient adjustments of the upper section. It is illustrated in Fig. 1 and comprises a lower rigid portion P and an upper adjustable portion U. The upper portion consists of a frame F, which is pivoted to the top corners of the rigid frame supporting the glass of the lower section, and a sash S containing the glass of the upper section, which is likewise adjustably pivoted to the opposite corners of the frame F. When arranged in the position shown in the illustration the faces of the occupants of the car are protected from the wind and flying particles in the air. Still a breeze is permitted to pass between the two sections of the shield which may be directed onto the bodies of the passengers for their comfort in warm weather. To place the two sections in an upright position and in line with each other the upper section is folded so that the edge E is brought close to the edge G of the lower section, and the frame F, whose sides now are parallel with the sides of the sash of the upper section, may then be raised into alignment with the lower section.

Brace for Auxiliary Springs—No. 966,510, dated August 9; to William Young, St. Louis, Mo.—This patent applies to a brace or radius rod R, Fig. 4, designed to

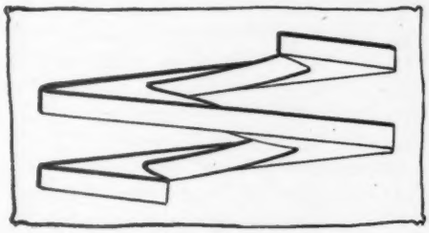


FIG. 5—SPRING LOCKING WASHER

be used in connection with the auxiliary coil springs now in extensive use on motor cars. It consists of a yoked arm A, having the yoked end attached to the lower or rear end E of the scroll leaf spring to which the lower end of the coil spring is also attached and the other end telescopes into the tubular portion which is pivoted to a bracket secured to the spring-clip. A set-nut N at the rear end of the tubular portion is provided for the adjustment of the rod to render it applicable to springs of various sizes.

Hydraulic Motor Car Brakes—No. 966,722, dated August 9; to William Herbert Weight, Bishopston, Bristol, England—As shown in Fig 3, this patent relates to an arrangement for controlling both front and rear wheel brakes of a motor car by means of hydraulic pressure. The mechanism is a combination with a brake ram cylinder C carried by each of the vehicle wheels, flexible tube connections T between each ram cylinder C and the pressure device D, a liquid reservoir R in suitable valve-controlled communication with the pressure device D, and means for operating the pressure device for the purpose of creating fluid pressure in the tubes and ram cylinders and thereby expanding the brake shoes by acting on the toggle connections between the ram cylinders and the ends of the brake shoes.

Lockable Support for Tire Casings—No. 963,808, dated July 12, to Arthur A. Rigny, Summit, N. J.—This patent covers a device to be included in a set of tire brackets which will permit of readily securing or releasing the tires, with means for locking them into place if desired. It is the portion that is generally attached to the running board and is designed as shown in Fig. 2. Section A is secured to the running board with screws or bolts passing through the lugs L, and similarly-shaped section B is hinged to it at O. Section A has a cylindrical casing C pivoted to a lug case integral with it, and in this casing the end of the hook K is resiliently held by the spring G. The outer end of section B is divided to form two fingers which are recessed at their upper extremities. A crossbar on the hook K is adapted to fit into these recesses, and a perforated lug U at the outer end of section A passes between the fingers. To separate the two sections it is necessary to remove the padlock P attached to the lug U and pull upwards and outwards on the hook K.

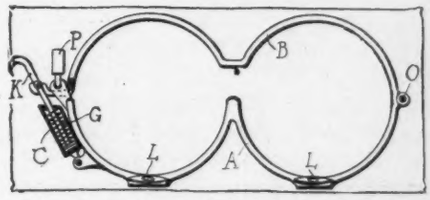


FIG. 6—LOCKABLE TIRE CASING SUPPORT

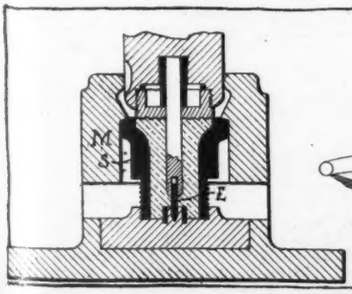


FIG. 2—SPARK-PLUG MANUFACTURING DEVICE

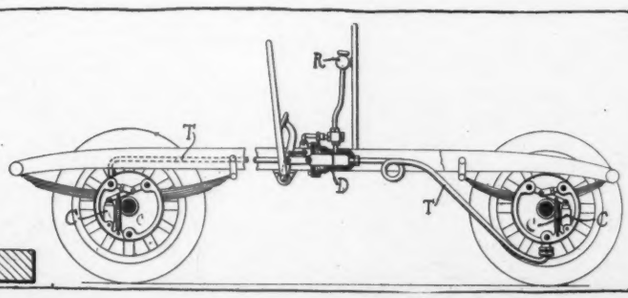


FIG. 3—HYDRAULIC MOTOR CAR BRAKES

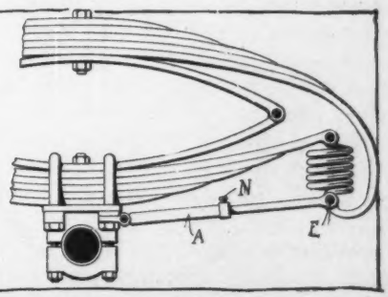


FIG. 4—BRACE FOR AUXILIARY SPRINGS

STUDEBAKER GARAGE, SOUTH BEND, IND.

Brief Business

WATERLOO, IA.—The Thompson Auto Co. is about to locate in a new building at Waterloo.

Corapolis, Pa.—Shamberg & Allen are building a garage 40 by 60 feet in Mill street.

Uniontown, Pa.—The Auto Rental Co., capital $5,000, has been organized at Uniontown by C. W. Johnson and others.

Baltimore, Md.—Frank E. Horner has taken on the local agency for the Republic tires, with headquarters at 19 West Saratoga street.

Boston, Mass.—The Castle Square Garage Co., of Boston, has taken on the Great Western for New England, with headquarters on Ferdinand street.

Spokane, Wash.—The Taxicab Motor Co. of Spokane moved into its new quarters at Third and Brown streets the past week. The Chauffeurs' Club of Spokane also will occupy a portion of the building.

Edgeworth, Pa.—The Anderson Automobile Co., capital $20,000, has received its charter, the incorporators being William C. Anderson and others of Sewickley and Edgeworth. A garage is being built for the company in Edgeworth.

St. Louis, Mo.—A. A. Franklin & Co. have been appointed factory distributors for the Cole 30 for the state of Missouri. A. A. Franklin is president of the company. The Franklin company has offices and salesrooms at 4127 Olive street.

Minneapolis, Minn.—The Minnesota Auto and Coach Painting Co. has erected a new brick building for its use at Nicollet avenue and Twenty-eighth street, for the painting of bodies. Back of the organization are F. W. Switzer and Elmer Sonneman.

New Bremen, O.—The Case Motor Car Co., capital $50,000, has been incorporated by J. H. and Edmund Grothaus, J. F. Laufersieck, Otto J. Doesel, Louis Huenke and others. The plant of the Grothaus-Laufersieck company heretofore used for the manufacture of steel plows will now be fitted up for the manufacture of commercial motor trucks.

Philadelphia, Pa.—William F. Lehman has joined the sales force of the Philadelphia branch of the Maxwell-Briscoe.

Portland, Ore.—An agency for the Krit has been established at 445 Hawthorne avenue, with L. C. Lieber in charge.

Du Bois, Pa.—The Motor and Supply Co. has been organized and is applying for a Pennsylvania charter. Rentz & Colkins are interested.

Boston, Mass.—George Sill Leonard, for some years with the Boston branch of the Studebaker company, is now with the Peerless company in the Hub.

Baltimore, Md.—The Baltimore Buggy Top Mfg. Co. has acquired additional ground, which will be used as a site for a garage. The entire lot is 150 by 150 feet.

Columbus, O.—The Iroquois Garage Co., 35 West Mound street, has taken the central Ohio agency for the Jackson for 1911. The concern has the 1911 agencies for the Haynes and the Brush.

Phoenix, Ariz.—Work was started on the new Alhquest company garage and repair shop on South Mill. The construction of the building will be of cement block and corrugated iron. The dimensions are 50 by 135 feet and about 14 feet high.

Jacksonville, Fla.—The Florida Motor Car Co. has built a large fireproof garage, located on Forsyth street, between Liberty and Market streets, and will occupy a plot of ground 60 by 90 feet. Ground was broken for the building last week. The company expects to occupy the new building about September 15.

Goshen, Ind.—The Palace garage on East Washington street has been completed and is occupied by J. E. Smith, Ford agent at Goshen, and R. C. Jones, of the Goshen Auto Tire Repair Co. The building is 45 by 66 feet, one story high and is so arranged that cars may enter on Washington street and leave on Fifth avenue.

Minneapolis, Minn.—C. H. Woodruff, motor car manager for the Studebaker Brothers Co., of Minnesota, for the past year, has resigned his position with that company to take charge of the motor car department of the La Crosse Plow Co., distributor of the Imperial. His headquarters will be at La Crosse, Wis.

Baltimore, Md. — The Howard Auto Transportation Co. has been organized to conduct a passenger and freight service in Howard county within 30 days. This is the first motor car line of the kind to be started in the state. The company has a capitalization of $5,000, divided into 500 shares. The incorporators are Albert Nichols, Samuel A. Nichols, Samuel H. Hopkins, Covington Zepp and Stuart M. Bailey, all of Howard county.

Hartford, Conn.—The Williams & Coltra Co., at 39 Church street, has taken the agency for the Abbott-Detroit.

Boston, Mass.—The new branch opened in Boston by the makers of the Morse car is being managed by F. K. Leatherbee.

New York—George R. Moran has joined the engineering and sales force of Barthel, Daly & Miller, sole importers of Schaefer ball bearings.

Pittsburg, Pa.—J. F. Leitzell has embarked in the motor car business for himself. He will announce a location shortly for his school of repair instructions.

Columbus, O.—The Warren & Southwick Co., manufacturer of carriages and buggies, has taken the central Ohio agency for the Garford truck and the Rider-Lewis. The company is located at 337 Cleveland avenue.

Cleveland, O.—The American Auto Sales Co. has been incorporated with an authorized capital stock of $50,000 to do a general motor car and repair busines, by George H. Canniff, John K. Corwin, E. P. Kinney, W. W. Welch and Frederick P. Walters.

Culumbus, O.—The Fitz Motor Car Co., of North High street, is considering the advisability of erecting a salesroom and garage in the north side. The concern has the Cole and the Byster truck. The company is a partnership consisting of J. W. Fitz and Dr. Snively.

Lisbon, O.—The Business Association of Lisbon is making rapid headway in selling the $25,000 worth of stock necessary to secure the Auto Truck Mfg. Co.'s plant for that city. The committee in charge of the matter includes J. J. Bennett, I. C. Bean, E. M. Cross and A. H. Wyatt. The former

Recent Incorporations

Albany, N. Y.—Sterling Garage and Practical Automobile School, capital stock $1,500; directors, Charles G. Tefft, Cohoes, Bert Carl, and Wayne P. Zent.

Cincinnati, Ohio—Stewer Motor Car Co., capital stock $5,000; incorporators, George W. Platt, and others.

Cincinnati, Ohio—William F. Behrens Co., capital stock $75,000; incorporators, M. M. Butler and others.

Chicago—Furner Motor Car Co., capital stock, $25,000; to sell motor car accessories; incorporators, E. Furner, A. E. Eschart, and W. J. Bell.

Chicago—Chapin Automobile Co., capital stock $50,000; to manufacture and deal in motor cars, supplies; incorporators, G. E. Plumb, D. C. Dell and M. N. Davis.

Birmingham, Ala.—Smith Motor Car Co., capital stock $12,500; to manufacture, buy, sell and repair motor cars; incorporators, C. S. Silby, S. L. Smith and J. B. Garber.

Albany, N. Y.—Motor Parts Co., capital stock $125,000; to sell motor accessories.

Chicago—Chicago Regal Motor Co., capital stock, $10,000; to deal in motor cars; incorporators, Glenn E. Holmes, Donald H. McGiloray, and Earle F. Tilley.

Announcements

Welch paint factory will be made over for the new plant.

Elberon, N. J.—Charles E. Oelschager is planning the alterations of the properties 1513-15 Vine street into a garage.

Minneapolis, Minn.—The Haynes Automobile Co., of 219 South Sixth street, has been appointed territory distributors for the Cole 30.

Monessen, Pa.—M. S. Smith, of Pittsburg, has bought the Monessen garage at Monessen, Pa., from L. L. Reeves and William McShaffrey.

Hartford, Conn.—Lee Campbell, for the past year connected with the sales force of the Hartford Packard branch, has been assigned to the Springfield office.

Chillicothe, O.—The Scioto Auto Car. Co. has been incorporated with a capital of $150,000 to manufacture motor cars and motor trucks. The incorporators are F. C. Arbenz and others.

Boston, Mass.—The Inter-State branch that was opened in Boston this week is located at 153 Boylston street, with Virgil A. Charles in charge. The entire New England business will be directed from there.

Birmingham, Mass.—The Smith Motor Car Co. has been incorporated with a capital of $12,500. The officers are given as C. S. Silby, president; S. L. Smith, secretary and treasurer, and J. B. Garber. The company intends to sell, manufacture, buy and repair motor cars.

Hartford, Conn.—The Buick is now represented in Hartford and Tolland counties by the Buick Garage Co., which, for the present, is located in the old Rambler quarters at 18 Elm street. David Roberts, who handled the Pope-Hartford and later the Ford in Tolland county, is the prime mover of the new concern, which contemplates the erection of a large garage on Main street.

Union City, Pa.—E. M. Cooper, E. M. Cooper, Jr., and Ray Cooper have opened a large garage on Main street.

Pittsburg, Pa.—The Banker Windshield Co. is now located in its new factory at Ellsworth avenue and Summerlea streets, east end.

Galion, O.—The Hoard Motor Car Co. is taking bids on a car factory to cost $60,000, from plans by Architect Vernon Redding, of Mansfield, O.

Spokane, Wash.—The garage of the L. H. Rose Automobile Co. has been recently altered and changed. The Studebaker, Flanders and E-M-F cars are handled.

Seattle, Wash.—The Stearns agency in Seattle has been moved from Fifth and University streets to Broadway and Madison. The garage and sales rooms will be used exclusively in the interest of the Stearns in Seattle.

Albany, N. Y.—The Le Roy Motor Car Co. has been incorporated with the secretary of state. The company is capitalized at $3,500 and the directors include Thomas W. Larkin, Edwin C. Eberhart and Arch Y McCowan, of Le Roy.

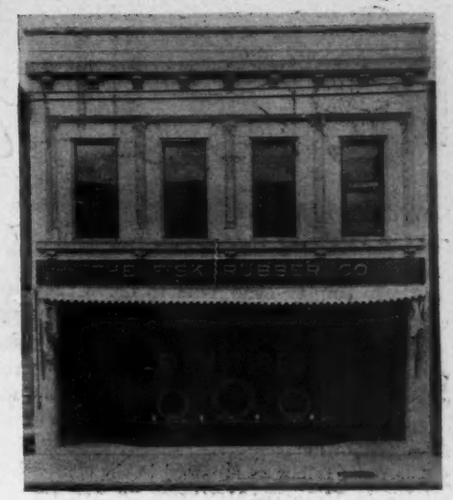
Pittsburg, Pa.—W. W. Bennett, who was for 5 years with the Standard Automobile Co., has rented a garage at 5906 Penn avenue, east end, and is the home for the Pope-Hartford Pittsburg agency. Associated with him is Roy Goodman.

Philadelphia, Pa.—The Consolidated Rubber Tire Co., manufacturer of the Kelly-Springfield tires, 315 North Broad street, will shortly remove to 208 North Broad street. The floor space of the new quarters is nearly double that of the old.

Cincinnati, O.—The Stover Motor Car Co. has been incorporated with an authorized capital stock of $25,000 to manufacture and sell motor cars and other vehicles by L. K. Emerson, George W. Platt, R. L. Dallings, Stanly M. Adams, Parker K. Gale and Alex. L. Parker.

Minneapolis, Minn.—The Western Motor Supply Co. has opened an accessory supply house at 1018 Nicollet avenue, doing a wholesale business only. The organizers of this corporation are R. A. Steckbauer, president; E. D. Zimmerman, vice-president and secretary, and B. N. Schneider, treasurer.

Pittsburgh, Pa.—The Collins Gear and Motor Co., at Canonsburgh, Pa., has purchased of the Simpson Stove and Mfg. Co. the plant, which has not been operated for several years, and will convert it into a factory for the manufacture of motor cars, axles, gears and motors. In addition the company will erect a 60 by 300 foot building and expects to have the entire plant ready by December 1.



ST. LOUIS STORE OF FISK RUBBER CO.

Cincinnati, O.—A permit was granted to remodel the garage of F. B. Maertz, on Plum street, opposite the city hall.

Salt Lake City, Utah—Studebaker Brothers have just moved into their new garage at the corner of Second South and Second East streets.

New Brighton, Pa.—S. Creese & Son have broken ground for a new garage in Upper Seventh avenue and will have one or more good agencies.

Philadelphia, Pa.—The Franklin Motor Car Co., of 152 North Broad street, has contracted with the Cole Motor Car Co. for its Philadelphia and vicinity selling rights of the Cole 30.

Chicago—H. Geoffrey Fletcher, who recently resigned the position of advertising manager for the Times Square Automobile Co., has been appointed traveling representative for the American Motor Car Co., of Indianapolis, Ind.

Baltimore, Md.—One of the latest cars to enter the Baltimore field is the Everitt, which is being handled by the Pullman Automobile Co., which is the sole agent for the state of Maryland. The office is at 1117 Cathedral street and the garage and repair shop at 1803 Lovegrove alley.

Pittsburg, Pa.—The National Automobile Co., capital $100,000, has been organized in Pittsburg and will take over the location formerly occupied by the Standard Automobile Co. at 5917 Baum street. M. J. Caton is president of the new company, which will have the agency for the Owen and Haynes.

Charlotte, N. C.—A branch salesroom of the Gregory Motor Co. has been opened here for the sale and distribution of Oldsmobile, Brush and Oakland in North Carolina. This company has the agency for these cars in the two Carolinas and heretofore the business of the two states has been conducted from headquarters in Columbia, S. C.

Recent Incorporations

New York—Garage Service of America; capital stock $25,000; to maintain a garage; incorporators, R. H. Wagner, L. C. Twomby and R. C. Davey.

Albany, N. Y.—Edwards Crist Mfg. Co., capital stock $30,000; to manufacture motor cycles and accessories; incorporators, H. Edwards, R. C. Crist and A. O. Lambeau.

New York—Pennsylvania Motor Car Co., capital stock $50,000; to manufacture various kinds of motors, engines, motor cars, motor cycles, aeroplanes, motor boats, etc.; incorporators, D. Hamilton, A. C. Russell and L. Denny.

New York—Moore Auto Skid Preventor Co., capital stock $500,000; to manufacture devices and appliances for safety of motor cars; incorporators, Franklin J. Berry, N. J. Earnest Lewin and Max Wirth.

New York—Seymour Auto Supply Co., capital stock, $50,000; to manufacture devices and supplies for motor cars, etc.; incorporators, P. S. Brashear, S. U. S. Suits and H. J. Howland.

Dover, Del.—Great American Automobile Co., capital stock $1,500,000; to manufacture motor cars, motor vehicles and trucks; incorporators, Samuel Quinn, Jr., Charles N. Lee, L. N. Nan Briggle, and H. W. Davis.

Legal Lights and Side Lights

OWNER'S LIABILITY

THE following case should prove of interest to all motor car owners who regularly employ chauffeurs to drive their machines. The case squarely raises the point as to when the owner, or master, is to be held liable in damages for injuries caused by the car when in the hands of the chauffeur who is not acting under orders from the owner.

The facts follow as reported in the court's opinion in Moon vs. Matthews, 76 Atl. Pa. 219: "The plaintiff sought to recover damages for injuries received in a collision between a buggy in which he was riding and a motor car owned by the defendant and operated by his chauffeur. The accident occurred upon a dark night. Plaintiff was driving along the road, when he saw and heard the car approaching. He turned as far as possible to the right side of the road to let it pass; but, according to his testimony, the car came directly towards him, struck his buggy, and he either jumped or was thrown into the road, and severely injured. It was admitted that the car was owned by the defendant and that the chauffeur was employed by him to care for and operate that particular vehicle. The trial judge submitted to the jury for their determination, as questions of fact, whether the accident was caused by the negligence of the chauffeur, whether the plaintiff was guilty of contributory negligence, and whether at the time of the accident the chauffeur was acting within the scope of his employment, and was upon his master's business. Upon all these matters the jury found in favor of the plaintiff.

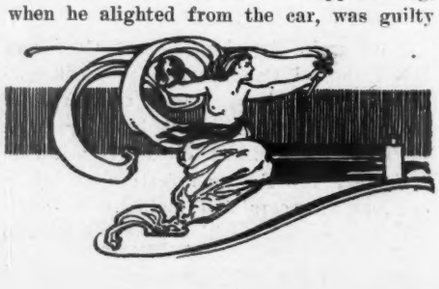
"Counsel for appellant—the owner of the car—maintain that at the time of the accident the chauffeur was not engaged in the master's business, and was acting in disobedience of orders. This claim is based upon evidence offered by the defendant, tending to show that he had forbidden the chauffeur to take out the car unless the defendant was with it, and that upon the night of the accident the car was taken out by the chauffeur, under the direction of the sister of the defendant, who made her home with the defendant and was regarded as a member of the family. It was not pretended that the chauffeur was acting in any way on his own business."

On these facts the court on appeal says in part: "It was shown that the motor car belonged to defendant, and at the time of the accident was being operated by his regular chauffeur, not upon an errand of his own, or to serve his own purposes, but in obedience to an order of a member of defendant's family; that the occupants of the car were friends of defendant, and guests of his sister, and the errand upon which the car was taken was entirely proper and fitting in itself. Under such circumstances, the burden of proof was upon defendant to show that the chauffeur was not acting within the scope of his employment, and upon the business for which he was employed by his master. The test is whether the act was done in the prosecution of the business in which the servant was employed to assist. If it was, the master is responsible. The fact that while acting for the master he may have disobeyed his commands does not take the act out of the scope of his employment. The present case as made out by the evidence of the plaintiff was sufficient to warrant a recovery."

Another recent case in Minnesota, Thomas vs. Armitage, 126 N. W., Minn., 735, involves the liability of the car owner for the acts of his chauffeur or servant. The facts are as follows: "Appellant's car, while driven by his employe, came in contact with driven by his employe, came in contact with a buggy drawn by a team of horses driven by an employe of respondent. The collision occurred in a public street in Princeton, and resulted in damaging the buggy and frightening the team, which broke away, and ran down the street, and damaged another of respondent's vehicles, standing in front of his barn. The court correctly instructed the jury that appellant was responsible for the conduct of the driver of the motor car, if he was guilty of negligence. Appellant had been driving the machine, and when he reached his place of business, stepped out, whereupon his employe, with appellant's permission, attempted to turn the machine around, when the collision occurred. The driver was not acting independently, but was serving his employer, and was within the scope of his employment."

LOOKING BEHIND

In a recent Minnesota case the defendant was driving his motor car at a speed of about 20 miles an hour in one of the principal streets of the town of Mankato, and was following a street car. This car stopped at a street crossing to allow the plaintiff to alight. As he got off he was struck by defendant's motor car and seriously injured. The defendant insisted that plaintiff not having looked in the direction from which the motor car was approaching, when he alighted from the car, was guilty of contributory negligence as a matter of law. The court on appeal held he was not. The plaintiff's attention at the moment was directed toward alighting from the car in safety, and he was not required to anticipate the negligence of defendant in driving his motor car at a reckless rate of speed upon him." This decision was rendered in Liebrecht vs. Crandall, 126 N. W., Minn., 69.



NO TEMPORARY LICENSES

An opinion handed down by Attorney General O'Malley, of New York state, is highly interesting all motorists of the Empire State just now. In reply to information asked by Secretary of State Koenig requesting construction of section 285 of the Callan law, the attorney general decides that the secretary of state hasn't the power to grant temporary licenses to non-residents. Attorney General O'Malley states there is nothing in the statute authorizing the secretary's office to issue temporary licenses or to grant other special privileges to non-residents. The only "exemption and privilege" is the exemption from registration, and is granted only to residents of other states and governments which grant the same to residents of New York. This is regarded as a most important point. The Callan law is far from being popular with the motorists of New York state.

ON CONTRIBUTORY NEGLIGENCE

In a recent New Jersey case the trial court gave an instruction to the jury which amounted to a construction of the law which would make a motor car driver liable for injuries to a 7-year-old boy, irrespective of whether the boy was guilty of negligence also or not. This instruction was presented to the supreme court of New Jersey on appeal in the case of Verdon vs. the Crescent Automobile Co., 76 Atl., N. J., 346, and was there held erroneous. The instruction in part was: "That is a question for you, the jury, to settle, whether or not having seen the boy, as they say they did 75 feet away, it was not their duty to decrease the speed of the machine so as to have it under such reasonable control as would enable them to stop, if necessary, in order not to run against the boy, even if the boy was acting in the most careless manner possible and running in front of the machine."

Regarding this instruction the supreme court in part said: "This instruction eleminated all question of contributory negligence on the part of the plaintiff, and in effect charged the jury that the machine must be under such control that the defendant could immediately stop it, if the plaintiff by the most careless act possible heedlessly came in contact with the machine." * * * "The instruction is clearly erroneous."